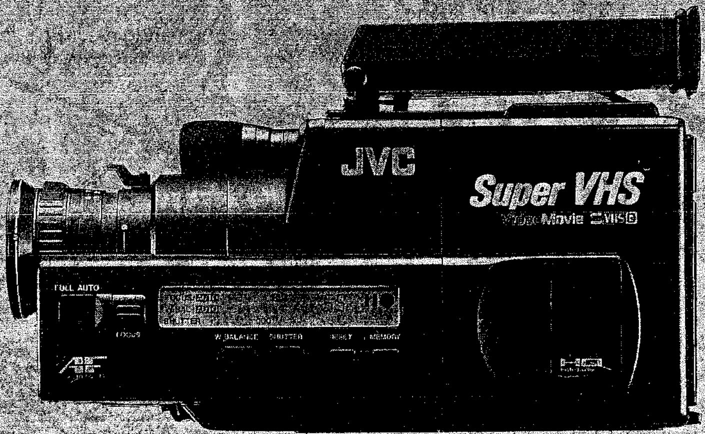
JVC

SERVICE MANUAL

VHS VIDEO MOVIE

GR-S55U



SVHSC

HQ High Quality

SPECIFICATIONS

Format	SVHS NTSC standard
Power source	DC 9.6 V
Power consumption	9 W (avg.) 1.1 A (max.)
Signal system	NTSC-type
Recording system	Luminance: FM recording Color: Converted sub-carrier direct recording Conforms to SVHS standard
Cassette	SVHSC / VHSC cassette
Tape speed (SP)	33.35 mm/sec (1-5/16 ips)
(EP)	11.12 mm/sec (7/16 ips)
Recording time	
Max. (SP)	20 minutes (with ST-C20 cassette)
(EP)	60 minutes (with ST-C20 cassette)
VIDEO	
Output	1 Vp-p, 75 ohms, unbalanced (via AV connector)
Input	0.5 — 2.0 Vp-p, 75 ohms, unbalanced
S/N ratio	More than 40 dB (with Rohde & Schwarz noise meter)
AUDIO	
Output	—6 dBs, 1 k-ohm (via AV connector)
Input	—8 dBs, high impedance
Microphone input	—68 dBs, high impedance, unbalanced
Pickup	1/2"-format CCD
Minimum required illumination	10 lux (1 fc) (at F/1.4)
Illumination range	10 — 100,000 lux (1 — 9300 fc)
Lens	F/1.4~2.0, f = 9 — 54 mm, 6:1 two-speed power zoom lens with auto iris control and macro position, filter diameter 49 mm
Viewfinder	Electronic viewfinder with 0.6" black/white CRT
Selectable high-speed shutter	Switchable (1/250, 1/500, 1/1000 sec.)
Color temperature switching	Switchable (3,200 K/4,500 K/5,500 K)
White balance adjustment	Full-auto/preset standard
Operating temperature	0°C to +40°C (32°F to 104°F)
Operating humidity	35% to 80%
Storage temperature	—20°C to +50°C (—4°F to 122°F)
Weight	1.2 kg (2.6 lbs) (with viewfinder)
Dimensions	110(W) x 149(H) x 243(D) mm (4-3/8" x 5-7/8" x 9-5/8") (incl. viewfinder)

AA-V5U SPECIFICATIONS

Power requirement	USA and Canada: AC 120V ~, 60 Hz Other countries: AC110—240 V∿, 50/60 Hz
Power consumption	21 watts
Output	DC 14 V ⎓ 1.1 A (Charge) DC 9.6 V ⎓ 1.2 A (VideoMovie)
Charging system	Constant current, peak detection, timer controlled
Dimensions	38(W) x 68(H) x 150(D) mm (1-1/2" x 2-3/4" x 5-15/16")
Weight	Approx. 340 g (11.2 oz)

C-P5U SPECIFICATIONS

Type	VHS cassette adapter
Dimensions	188(W) x 25(H) x 104(D) mm (7-7/16" x 1" x 4-1/8")
Weight	235 g (0.5 lb)
Accessory	"AA"-size battery x 1

Provided accessories:

AC power adapter/battery charger	AA-V5U
Cassette adapter	C-P5U
Cassette tape	ST-C20
Battery pack	BN-V6GU
Carrying case	CB-V55U
S-VIDEO cable	
A/V output cable	
Shoulder strap	
Electric viewfinder	
Lens cap	
Lens hood	
Battery for clock operation	

For optional accessories, refer to pages 37 and 38.

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

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No. 86021
December 1987

NOTE: For a technical description, please refer to Technical Guide VTG86003 GR-S55/25 NTSC.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors

5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

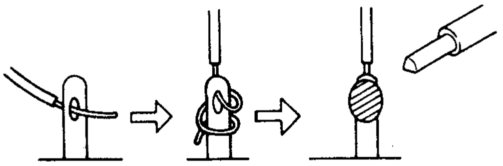


Fig. 1

6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

7. Check that replaced wires do not contact sharp edged or pointed parts.

8. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

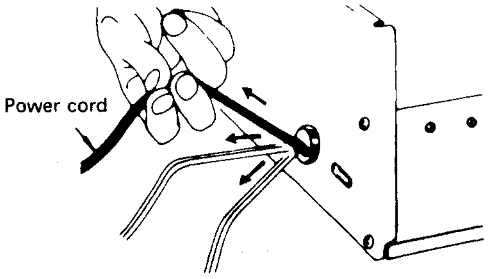


Fig. 2

9. Also check areas surrounding repaired locations.

10. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

11. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

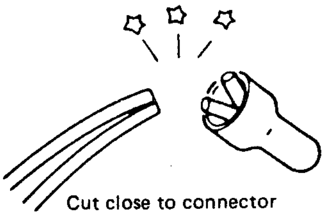


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

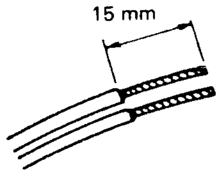


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

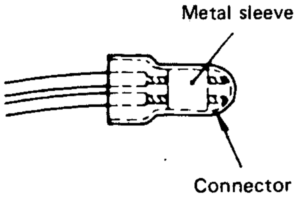


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

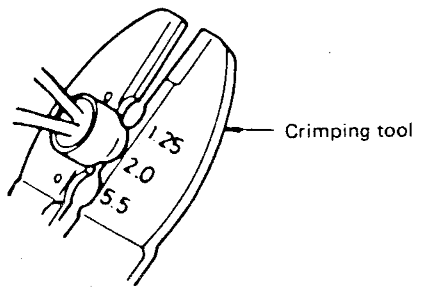


Fig. 6

(5) Check the four points noted in Fig. 7.

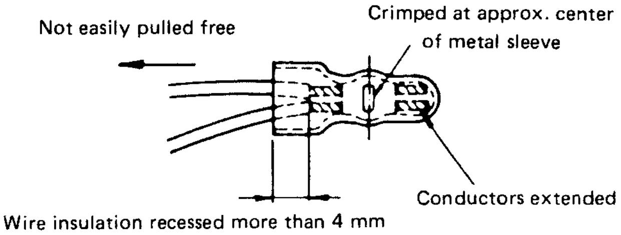

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

2. **Dielectric strength test**
Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

3. **Clearance distance**
When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table below.

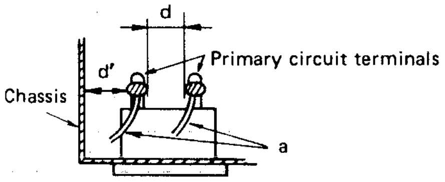


Fig. 8

4. **Leakage current test**
Confirm specified or lower leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)
Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure and following table.

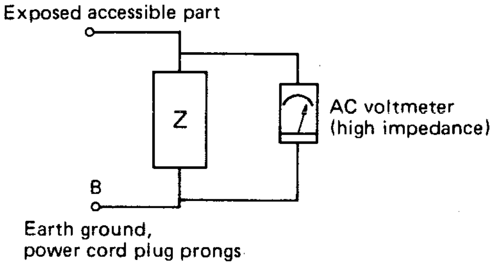


Fig. 9

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	≧ 1 MΩ/500 V DC	1 kV 1 minute	≧ 3 mm
110 to 130 V	USA & Canada	–	900 V 1 minute	≧ 3.2 mm
*110 to 130 V 200 to 240 V	Europe Australia	≧ 10 MΩ/500 V DC	4 kV 1 minute	≧ 6 mm (d) ≧ 8 mm (d') (a: Power cord)

*Class II model only.

Table 1 Ratings for selected areas

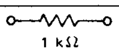
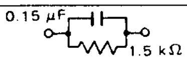
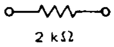
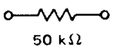
AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (b) to:
100 V	Japan	 1 kΩ	i ≦ 1 mA rms	Exposed accessible part
110 to 130 V	USA & Canada	 0.15 µF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible part
110 to 130 V 220 to 240 V	Europe Australia	 2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminal
		 50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current ratings for selected areas

Note: This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

JVC®

INSTRUCTIONS

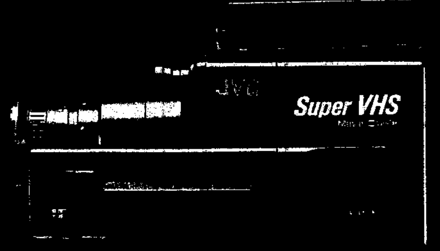
VideoMovie

S-VHS-C HQ High Quality

CAMERA-RECORDER/PLAYER

GR-S55U

Specifically for the GR-S55U/AA-V5U



CCD
Charge Coupled Device

AF
AUTO FOCUS

For Customer Use:
Enter below the Serial Nos. of the GR-S55U VideoMovie and the AA-V5U Battery Charger.
The former is located on the bottom of the GR-S55U and the latter on the Bottom of the AA-V5U.

Model No. GR-S55U AA-V5U
Serial No. ______ ______

YU30052-10

CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

The AA-V5U AC Power Adapter/Charger should be used with:
AC 120 V∿, 60 Hz in the USA and Canada,
AC 110–240 V∿, 50/60 Hz in other countries.
Caution:
To prevent electric shocks and fire hazards do NOT use any other power source.

CAUTION (applies to the AA-V5U)
TO PREVENT ELECTRIC SHOCK DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

S-VHS-C

Cassettes marked S-VHS-C and VHS-C can be used with this video cassette recorder. However, S-VHS recordings are possible only with cassettes marked S-VHS-C.

Thank you for purchasing the JVC GR-S55U Super VHS VideoMovie. This unit provides a breath-taking improvement in picture quality, with over 400 lines of picture resolution to double your video enjoyment. Weighing only 2.6 lbs, the GR-S55U includes both recording and playback functions and a tremendous array of features in a single compact unit for the most convenient super VHS live recording availave today. Learn about all the available features listed in full on the following page and take advantage of them for your total movie-making enjoyment.

Before using this video recorder, read this instruction booklet carefully so that you will obtain the best results from your GR-S55U.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

This equipment should be used with DC 9.6 V ⎓ only.
CAUTION:
To prevent electric shocks and fire hazards, do NOT use any other power source.

NOTES:
- The rating plate (serial number plate) and safety caution of the main unit are on its bottom.
- The rating plate (serial number plate) of the viewfinder is on its bottom.
- The rating plate (serial number plate) of the AC power adapter/charger is on its bottom.

The provided viewfinder is the VF-V25U. Do not use any other viewfinder with the GR-S55U.

JVC COMPANY OF AMERICA
Division of US JVC CORP.
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INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna;

Relocate this equipment with respect to the receiver;

Move this equipment away from the receiver;

Plug this equipment into a different outlet so that this equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the US Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

Warning on lithium battery

The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100°C (212°F) or incinerate.

Replace battery with Matsushita Electric CR 2025, use of another battery may present a risk of fire or explosion.

- Dispose of used battery promptly.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.

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FEATURES

- High quality picture with newly developed S-VHS and HQ system.
- Separated Y/C (luminance/chrominance) terminals for higher picture quality.
- Allows direct playback with no additional components necessary.
- Ultra-compact and ultra-lightweight: a mere 2.6 lbs. (1.2 kg).
- Variable-speed electronic shutter for sharp clear playback of fast action shots (1/1000, 1/500, 1/250, 1/60 (standard) second).
- Newly developed high-resolution 1/2" field-storage type CCD (Charge Coupled Device) pickup delivering more than 400-line resolution pictures.
- One-button full-auto operation of focus, exposure, and white balance.
- Powerful, two-speed 6:1 power zoom with macro function.
- Maximum of 60 minutes recording time on a single tape in EP mode.
- High-sensitivity/low-lag design: allows shooting in light as low as 10 lux.
- Image Sensing auto-focus.
- Automatic Color Tracking white balance with three preset positions.
- Backlight compensation button.
- Audio/video fader linked to start/stop trigger.
- Large, easy-to-read LCD display.
- Ultra-compact adjustable electronic viewfinder (monochrome CRT, 0.6-inch screen) with diopter control, also for instant on-the-spot playback.
- Selectable automatic date recording function.
- Recordable date/time display.
- Elapsed recording time counter.
- Second recording start/stop button provided on top of GR-S55U.
- Zero Frame Editing for glitch-free, smooth scene transitions.
- Dubbing mode switch provided for best results when dubbing.
- Selectable quick review function.
- One-button recording standby mechanism.
- Master Edit Control system: allows control of both GR-S55U and connected designated JVC VCR using GR-S55U's controls, and preroll editing for edits free of transition-point gaps and noise.
- Shuttle Search in both directions.
- Unique grip battery doubles as palm grip, saving weight and space.
- Ergonomic design with palm grip and finger rest for trigger control.
- Trigger alarm system for preventing recording errors.
- Three-way power supply flexibility: battery pack, AC power adapter, and car battery.

S-VHS vs. VHS

- VHS is the world's most popular video format. if you owned a VCR or camcorder, most likely it was a VHS machine.
- **S-VHS is a new video sub-format based on VHS. It offers superior picture quality with a horizontal resolution of more than 400 lines by shifting the FM carrier frequency of the luminance signal from the conventional 3.4 – 4.4 MHz range to a higher one of 5.4 to 7 MHz.**
- The GR-S55U is equipped for recording and playback in both the S-VHS and VHS modes. Therefore, you can still record and play back in VHS.

The GR-S55U is designed to be used with NTSC-type color television signals. It cannot be used for playback with a television of a different standard. However, live recording and viewfinder playback are possible anywhere. Use the BN-V5GU/BN-V6GU battery packs and, to recharge them, the provided multivoltage AC power adapter/battery charger. (An appropriate conversion adapter may be necessary to accommodate different designs of AC outlets in different countries.)

PRECAUTIONS

For safety, strictly observe the following instructions.
- ●Do not disassemble or modify the unit.
- ●Prevent inflammables, water and metallic objects from entering the unit.
- ●Do not use the unit when there is lightning in the vicinity. Disconnect the power cable of connected equipment.

Avoid using the unit under the following conditions:
- ●Places subject to excessive humidity or dust.
- ●Near appliances generating strong magnetic or electric fields (speakers, broadcasting antennas, etc.).
- ●Places subject to soot or steam such as near a cooking stove.
- ●Places subject to excessive shock or vibration.
- ●Near a television set (rolling pictures or howling might result).
- ●Extremely hot places.

Do not expose the unit to high temperatures over 40°C (104°F) for long periods.

If the unit should be subjected to direct sunlight, or left in a closed car in summer, or placed near a heater, the CCD and the auto-focus sensor may deteriorate and the cabinet may become deformed. Furthermore, this also may cause the transistors and other electronic and mechanical parts to malfunction. Remember the following:
- ●Do not leave the unit in places of over 50°C (122°F).
- ●Do not use the unit in places of over 40°C (104°F).
- ●Do not use the unit in places of below 0°C (32°F).
- ●Protect the unit from excessively dry or excessively humid conditions (below 35 % or above 80 % humidity).
- ●For long storage, select a place between -20°C (-4°F) and 30°C (86°F).

Take special care for protection of the unit.
- ●Do not allow the unit to become wet.
- ●Do not leave the unit in closed cars on hot summer days.
- ●Take special care not to drop the unit or strike it against hard objects. Protect from shocks during transportation.

Make it a rule to observe the following instructions.
- ●Do not remove the battery pack or disconnect other power supply units during recording or playback before pressing the POWER switch to OFF. If not observed, this will cause tape damage.
- ●When the unit is not in use, remove the battery pack.

Keep the lens and viewfinder eyepiece always clean.
- ●When the lens is dirty or dusty, blow it off first and then gently wipe with a soft brush or lens cleaning paper.
- ●The lens is likely to become moldy if left dirty.

Be careful not to damage the CCD.
- ●Do not keep the lens directed at extremely bright objects such as the sun or other light sources for long periods. Although the CCD is less susceptible to such burn than a tube would be, caution should be exercised when using this unit. Most importantly, the lens should be capped except while actually shooting.
- ●Do not direct the eyepiece of the viewfinder at the sun.

Auto-focus requires a bit of consideration.
- ●Do not touch the focus ring while the auto-focus mechanism is in operation as this could damage the auto-focus mechanism.
- ●When a filter or a special-effect lens is to be attached to the end of the lens, be sure to turn power off or switch from the Auto-focus mode to the Manual mode. NEVER attempt to attach a filter or lens while the auto-focus mechanism is operating as this will result in malfunctioning. (If a teleconversion or wide-angle conversion lens is attached, the auto-focus mode cannot be used.)

Handle the unit carefully.
- ●Protect the microphone from excessive shocks.
- ●Do not carry the unit by holding it only by the viewfinder.

Moisture condensation disenables use of the unit.
- ●You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. This same phenomenon occurs on the head drum of a video recorder when the recorder is moved from a cool place to a warm place, after heating a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
- ●Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the recorder itself.
- ●If moisture condensation occurs on the head drum, a condensation warning appears in the counter display and the unit enters the Stop mode, unable to function. In such a case, wait for a few hours until the indicator disappears.

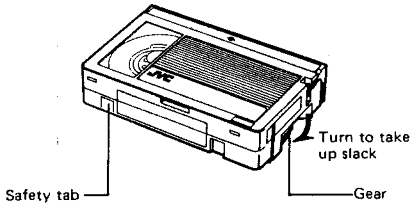
Maintenance
- ●When the cabinet is dusty, clean by gently wiping with a soft cloth.
- ●Avoid the use of strong cleaning agents such as benzine or alcohol as they may damage the cabinet.
- ●Cleaning should be done only after the battery pack has been removed or other power units have been disconnected.

Serious malfunctioning

> If malfunctioning occurs, stop using the unit immediately and consult your local JVC Service Center.

VIDEO CASSETTES

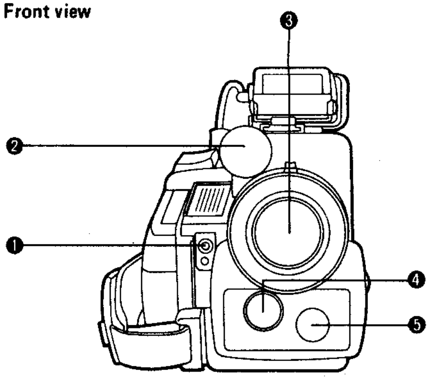
- ●The GR-S55U employs only the cassettes carrying respectively the SVHSC and the VHSC marks.
- ●Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- ●An inverted cassette cannot be inserted.
- ●Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- ●Make certain before loading the cassette that the tape is not slackened. If there is any slack, turn the gear on the cassette in the direction of the arrow to take up slack.
- ●The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- ●To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.



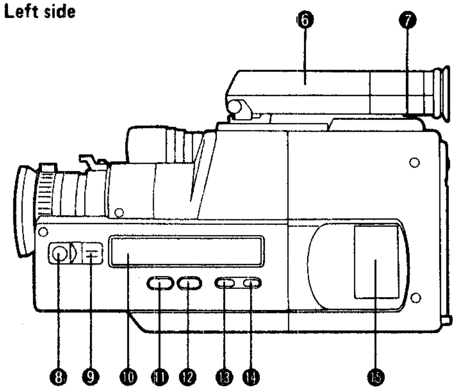
Storage of cassettes
- ●Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- ●Avoid storing the cassettes in humid or dusty places.
- ●Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- ●Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- ●Place the cassettes in cassette cases and position them vertically.

CONTROLS AND CONNECTORS

Front view



Left side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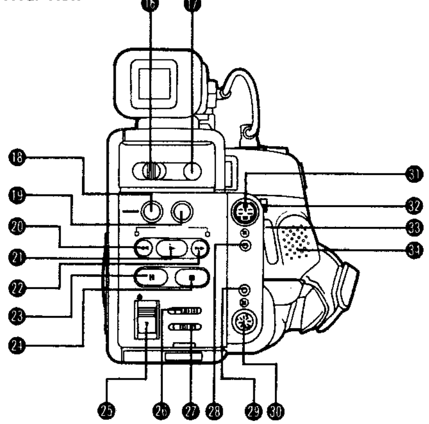
Rear view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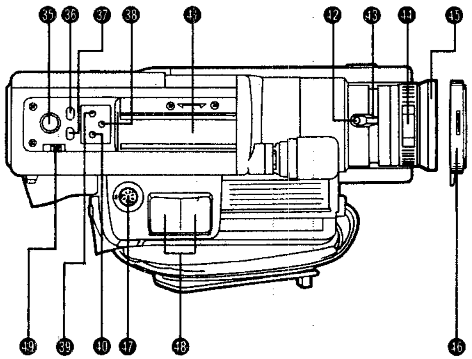
Top view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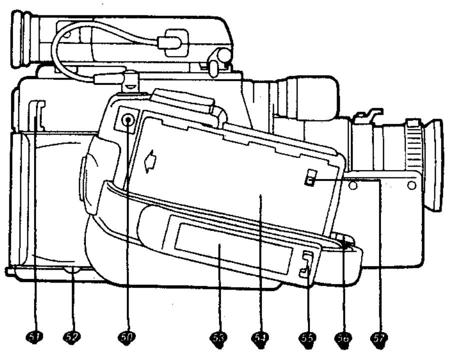
Right side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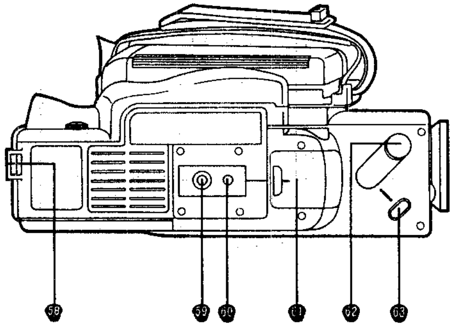
Bottom view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❶ **External microphone jack (MIC)**

❷ **Exclusive microphone**

Omnidirectional condenser microphone for simultaneous sound recording.

❸ **6:1 zoom lens**

F/1.4, f=9–54 mm. Filter diameter: 49 mm.

❹ **Auto-focus sensor window**

Allows light to enter for measuring the camera-to subject distance.

❺ **White balance sensor window**

Allows light to enter for white balance adjustment.

❻ **Electronic viewfinder**

For monitoring scene being shot or the playback picture after recording. Several indicators are included, as well as the date/time or elapsed recording time if selected.

❼ **Dioptric adjustment control**

Adjusts the viewfinder lens to suit the operator's eyesight.

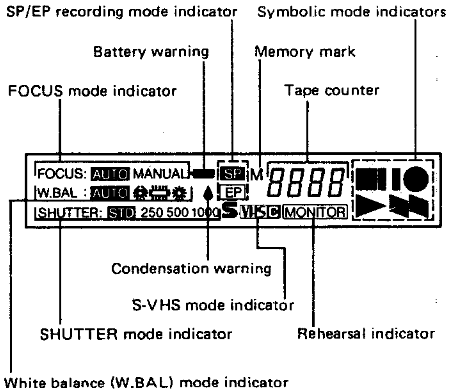
❽ **FULL AUTO button**

Pressing this button puts the focus and white balance under automatic control and selects the standard shutter speed. Auto-focus can be cancelled by pressing the FOCUS button; auto white balance can be cancelled by pressing the W.BALANCE button; the high-speed shutter can be selected by pressing the SHUTTER button. Pressing the FULL AUTO button in the full-auto mode has no effect.

❾ **FOCUS select button**

Switch to AUTO for automatic focus, and switch to MANUAL to focus manually. Check on the LCD display. The focus mode is reversed each time this button is pressed. The auto-focus mode can also be selected (together with the auto-white mode) by pressing the FULL AUTO button.

❿ **LCD display**


SP/EP recording mode indicator
Symbolic mode indicators
Battery warning
Memory mark
FOCUS mode indicator
Tape counter
FOCUS: AUTO MANUAL
SP
M
8888
W.BAL : AUTO
EP
SHUTTER: STD 250 500 1000
S-VHS-C
MONITOR
Condensation warning
S-VHS mode indicator
SHUTTER mode indicator
Rehearsal indicator
White balance (W.BAL) mode indicator

Tape counter: Shows from "0" to "9999".

Battery warning: Blinks when the battery power becomes insufficient for normal operation.

Condensation warning: Appears when excessive condensation occurs inside the unit.

Memory mark: Appears when the MEMORY button is pressed.

Symbolic mode indicator

STOP:	■	REWIND:	◀◀
PLAY:	▶	FAST FORWARD	▶▶
PAUSE:	❚❚	REVERSE SHUTTLE SEARCH:	▶◀◀
RECORD:	●	FORWARD SHUTTLE SEARCH:	▶▶▶
RECORD PAUSE:	❚❚●		

⓫ **W.BALANCE select button**

The white balance is manually selectable using this button. Press once to display the current white balance mode in the LCD display. Continue pressing to cycle through the available modes.

☼ : Halogen or tungsten lighting.

▭: Fluorescent lighting.

☼ : Daylight.

AUTO: Automatic white balance adjustment.

⓬ **SHUTTER select button**

Pressing this button switches the shutter between 1/250 ("250"), 1/500 ("500"), 1/1000 ("1000") -second high speed shutter and 1/60-second ("STD") speed, as displayed on the LCD. The standard shutter speed can also be selected by pressing the FULL AUTO button.

⓭ **Counter RESET button**

Press to reset the counter to "0".

⓮ **Counter MEMORY button**

Press this button at a point on the tape you want to locate later after resetting the counter to "0", and the tape will stop automatically at the counter reading of around "0" during rewind or fast forward.

⓯ **Cassette holder**

Insert a S-VHS-C video cassette for recording or playback.

⑯ POWER switch
Slide to turn the power on. The Stop indicator appears on the LCD display. Slide again to switch off power.

⑰ REC standby button
Press to engage the Recording standby mode. To start recording, press the recording start/stop button ㉝ .

⑱ MONITOR button
Push this button when you wish to rehearse shots before actually recording them. This function allows you to view the scene on the viewfinder without recording it. Push the STOP button to release it.

⑲ QUICK REVIEW/EDIT button
If you want to review the end of the recorded segment for confirmation, press this button from the Record-Pause mode; the tape will be rewound for about two seconds of program time and played back automatically for this section, after which it will stop in the Record-Pause mode in standby for the next shot. When dubbing from the GR-S55U to a designated JVC VCR, also functions to begin VideoMovie playback in synchronization with video deck recording (see "Using the Master Edit Control system", page 31).

⑳ REW/SHUTTLE SEARCH button
Pressing this button in the Stop mode rewinds the tape; pressing it in the Play mode allows fast playback in reverse (three times normal speed in SP mode, seven times normal speed in EP mode.)

㉑ PLAY button
Press to start playback.

㉒ FF/SHUTTLE SEARCH button
Pressing this button in the Stop mode fast-forwards the tape; pressing it in the Play mode allows fast playback (three times normal speed in SP mode, seven times normal speed in EP mode).

㉓ PAUSE/STILL button
Press to view a still picture during playback or pause playback.

㉔ STOP button
Press to engage the Stop mode.

㉕ EJECT switch
To open the cassette holder.

㉖ SP/EP recording mode select switch
Set to SP to record at standard tape speed. Set to EP to record at a slower tape speed, allowing an extended recording time of up to one hour with a single cassette.

㉗ DUBBING ON/OFF switch
Normally, set to OFF. For best picture quality when dubbing, set it to the ON position.

㉘ REMOTE control jack
For connection of the optional RM-P1U pause remote control unit.

㉙ Earphone jack (PHONE)

㉚ AV connector
Both audio and video signals may be delivered from this connector. To dub from this unit, connect the A/V input connectors of a second recorder to this connector, using the provided A/V cable.
To play back from this unit to a TV set, make a connection between this connector and the TV's A/V input terminals using the A/V cable.
For playback with a TV set not equipped with A/V terminals, connect the RF-V3U RF unit (optional) to this connector and to the TV.

㉛ S-VIDEO OUT
For connection to a television equipped with an S-VIDEO input.

㉜ ALARM ON/OFF switch
Switch to on to engage the trigger alarm system. Switch to off when you do not wish to use this system.

㉝ Recording start/stop button
Press this button in the Recording Standby mode to start recording. Pressing it again re-engages the Recording Standby mode.

㉞ Finger rest
Place your thumb on this grooved area next to the start/stop switch between switch operations.

㉟ Second recording start/stop (SUB TRIGGER) button
Functions exactly as the other recording start/stop button, for use when recording with the GR-S55U held low.

㊱ DATE/TIME REC ON/OFF button
Press this button when you do not wish to record the date/time. This will remove date/time indications from the viewfinder. Press again to record date/time. Date/time will reappear in the viewfinder.

㊲ REC TIME RESET button
Press this button to reset the elapsed recording time to zero. Ejecting the cassette also does this.

㊳ DISPLAY SELECT button
Press this button to select the date/time display and recording mode. It cycles through the modes in the following order:

Auto date record reserve → **Date display** → **Date/time display** → **Time display** ↩

The auto-date-record function automatically displays and records the date for 5 seconds upon turning on the power and beginning recording. Before recording begins, this mode is indicated in the viewfinder by auto date record reserve indication "–.–.–".

㊴ DATE TIME SELECT button
Use to select the portion of the clock or date settings to be changed. Cycles through the year, month, day, hour, and minute settings. To end adjustment, press once after selecting the minute portion.

㊵ DATE TIME SET button
Use to set the built-in clock and date function.

㊶ Viewfinder mount
Attach the provided viewfinder.

㊷ Macro button
Turn the zoom ring while pressing this button for macro shooting.

㊸ Manual zoom lever
Use to turn the zoom ring manually.

㊹ Manual focus ring
Use to turn the focus ring manually.

㊺ Lens hood

㊻ Lens cap
Cap the lens when not in use.

㊼ Viewfinder cable connector
Connect the viewfinder cable.

㊽ Power zoom buttons
For automatic zooming at slow speed, press lightly. For regular speed zooming, press firmly. "T" is for telephoto zooming and "W" is for wide-angle zooming.

㊾ REC TIME ON/OFF switch
When this switch is set to ON, the viewfinder displays the elapsed recording time. Switch to OFF to cancel the display.

㊿ DC IN terminal
For connection of the provided AA-V5U AC power adapter/battery charger, optional BH-V5U car battery charger or AP-P1U car battery cord for DC power supply.

(51) Slot for shoulder strap

(52) TRACKING control
Minimizes noise bars, if observed, during playback.

(53) Grip strap
Secures the operator's hand to the hand grip. Adjusts to fit hand size.

(54) Battery mount
The battery pack serves as a contoured handgrip when attached to the battery mount.

(55) Lens cap hook
This keeps the lens cap from swinging during shooting.

(56) Battery pack release lever
Move in the direction of the arrow to release the battery pack.

(57) S-VHS switch
When switched to ON (AUTO), the unit will automatically select the correct mode depending on the type of cassette tape used. When cassette tapes marked **S VHS C** are used, S-VHS mode will be selected and S-VHS-C will be indicated on the LCD display. If cassette tapes marked **VHS C** are used, the unit will select the VHS mode and no indication will appear. When this switch is set on OFF, the VHS mode will be selected regardless of the cassette tape used.
Note: Be sure to set this switch before attaching the battery pack.

(58) Slot for shoulder strap

(59) Tripod mounting socket

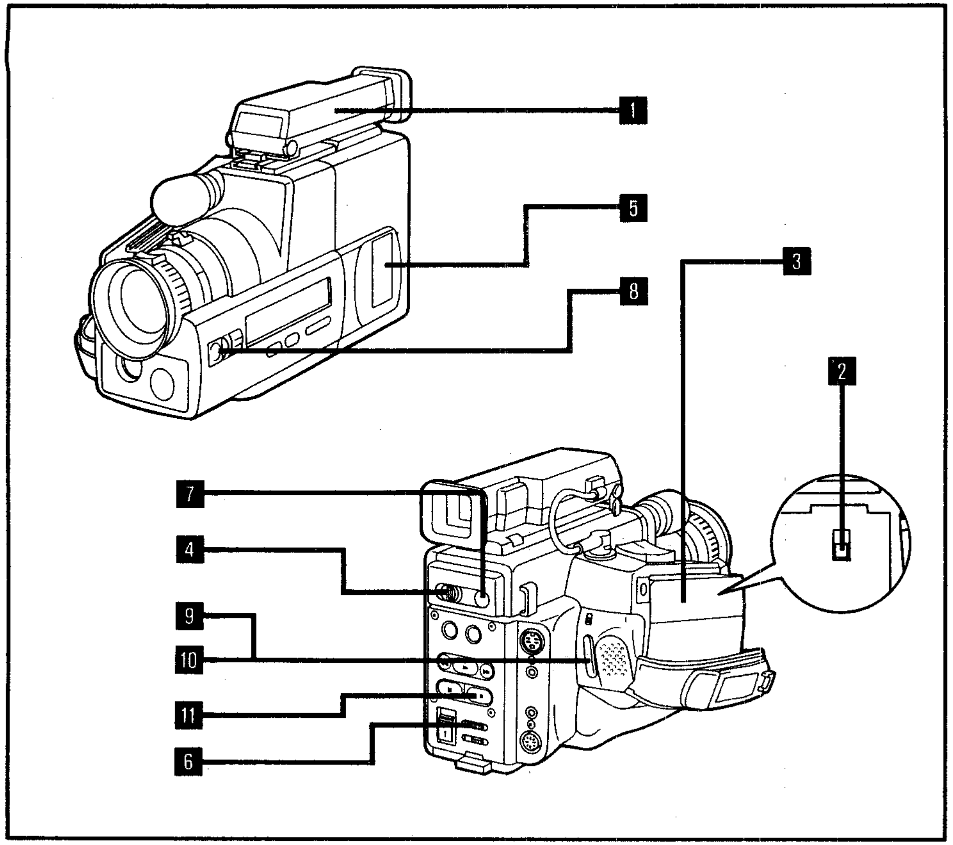
(60) Stud hole

(61) CLOCK BATTERY compartment
Holds the lithium battery that powers the date and time function.

(62) BLC button
Iris control is always automatic. For backlight compensation, press this button. While it is being pressed, the iris is 1 – 2 f-stops wider than the automatic setting.

(63) FADER button
To fade out the picture to a white blank screen, press this button, then press the recording start/stop button to start fading out. To fade in from a white blank screen, press this button, then press the recording start/stop button to start fading in.

LIVE RECORDING HAS NEVER BEEN SO EASY



Full-auto outdoor recording procedure

1. Mount the viewfinder.
   (Refer to page 11 for details.)
2. Set the S-VHS switch.
3. Attach the battery pack.
   (Refer to page 13 for details.)
4. Slide Power switch.
5. Pop in a cassette.
   (Refer to page 14 for details.)
6. Set tape speed to SP or EP.
7. Press REC standby button.
8. Press FULL AUTO button.
9. Shoot (push start/stop button).
10. Stop recording (push start/stop button).
11. To end recording, press STOP button.
    - To play back the recorded tape, press REW button and then PLAY.

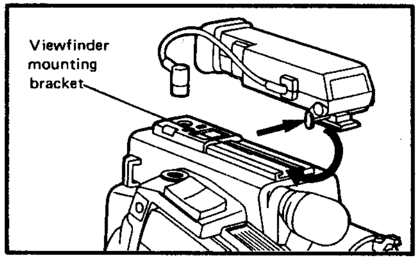
BASIC PREPARATIONS

Mounting the Viewfinder

Switch off power before mounting or removing viewfinder.

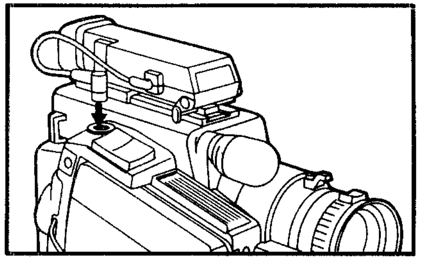
Mounting the viewfinder

1



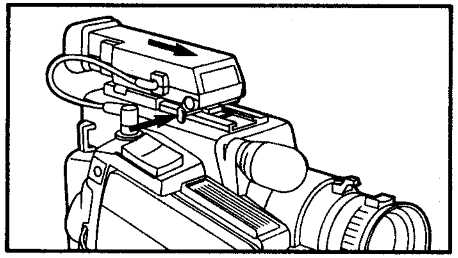
Align the viewfinder's coupling fixture with the mounting bracket on the body and slide the fixture into the bracket while pressing the knob.

2



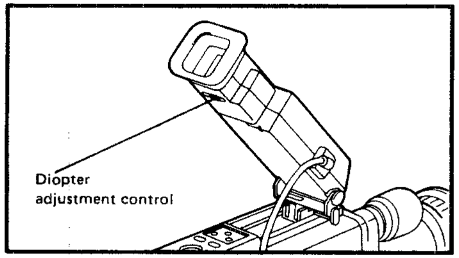
Connect the viewfinder cable to the viewfinder cable connector (VF).

Removing the viewfinder



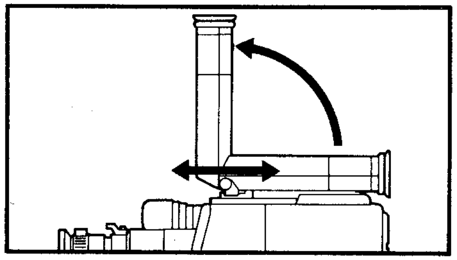
Pull out the viewfinder cable and slide the viewfinder out of the bracket while pressing the knob.

Diopter adjustment



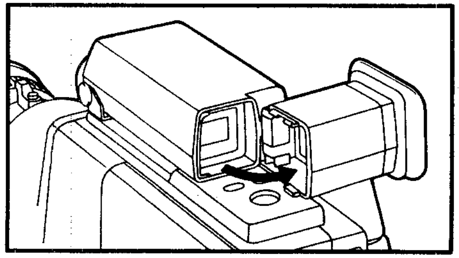
The viewfinder lens can be adjusted to suit the operator's eyesight by sliding the diopter adjustment control. Its normal position is to the far left, toward the cassette compartment.

Positioning the viewfinder



The viewfinder can be positioned for best viewability. It can slide forward or back and can be tilted up 90°.

Opening the eyepiece



The viewfinder eyepiece can be opened for cleaning or better viewability in playback.

Attaching the Shoulder Strap

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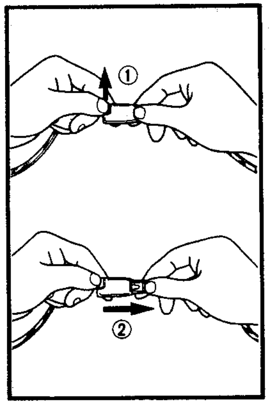
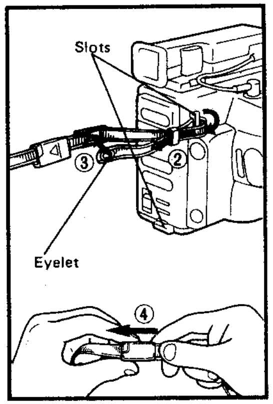


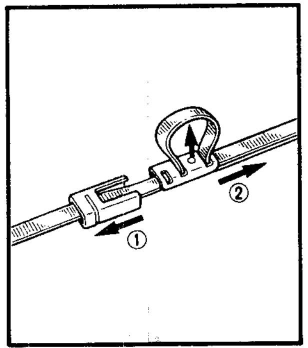
While pressing the release button down and sideway ①, slide the buckle out of the buckle shell in the direction of the arrow ②.

2


Slots
③
②
Eyelet
④

Guide the end of the strap through the slot on the GR-S55U ① and the keeper ②, and fasten the strap's eyelet on the buckle's hook ③. Then slide the buckle back, as shown, until it clicks ④.

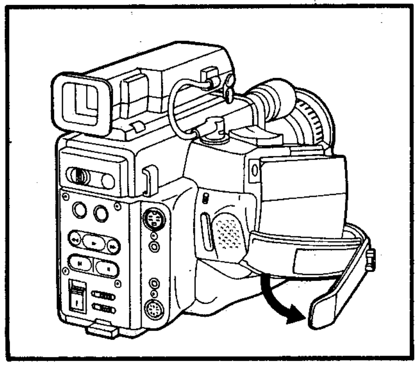
How to adjust the length of the shoulder strap



1. While pressing the release button, slide the buckle out and pull some slack through the buckle.
2. To lengthen the strap, feed the strap from ② toward ①. To shorten it, feed it from ① toward ②.

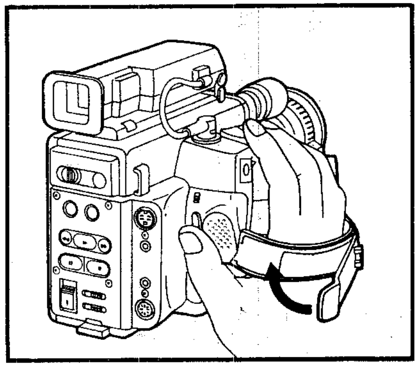
Adjusting the Grip Strap

1



Separate the Velcro strip to expand the loop.

2



Pass your right hand through the loop and grasp the lens grip. Adjust the length of the strap to suit your hand size and refasten the Velcro strip.

POWER SUPPLY SYSTEM

The convenient 3-way power supply system gives you a choice of the most appropriate power supply unit, depending on the application.

CAUTION
- No function is available without power supply.
- Do not use any power supply other than specified.
- Never attempt to use these power supply units with any equipment other than the VideoMovie.

Where AC power is not available

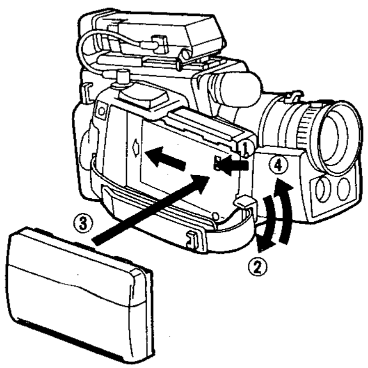
Use the battery packs:
- BN-V5GU (Regular)
- BN-V6GU (High-capacity)

Note:
The battery pack has been kept in the uncharged state for shipment. Therefore, before use, be sure to charge it. See page 35.

Attaching the Battery Pack

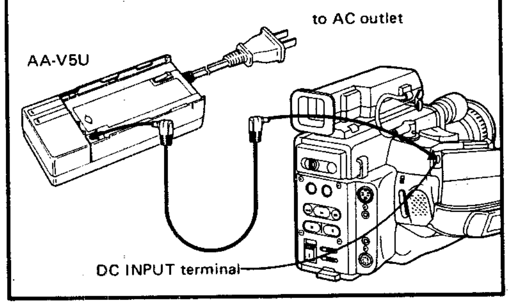
① Set the S-VHS switch. (See page 9.)
② Pull down the battery pack release lever.
③ Align the battery pack over the outline in the battery pack mount, and slide the battery pack into place in the direction of the arrow.
④ Push up on the battery pack release lever, until it locks into place.

To remove the battery pack, pull down the battery pack release lever and slide out the battery.



With AC power

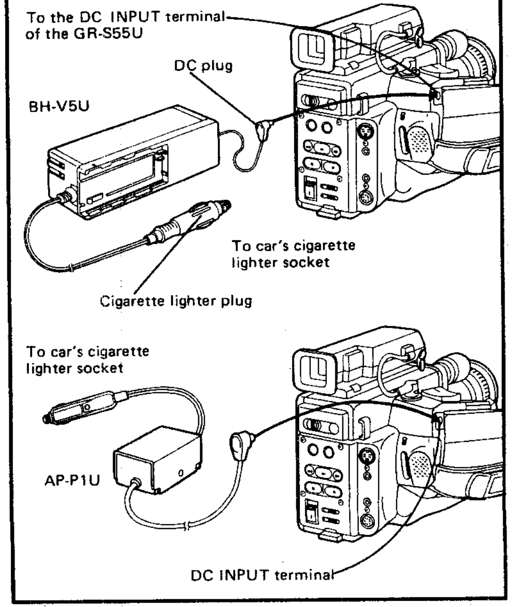
Use the provided AA-V5U AC power adapter/battery charger.


to AC outlet
AA-V5U
DC INPUT terminal

In a car

Use the optional AP-P1U car battery cord or BH-V5U car battery charger.

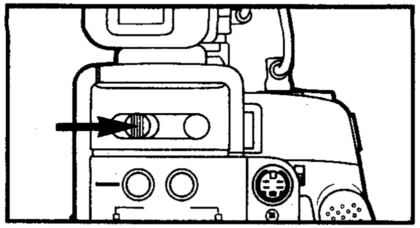
- Leave the car's engine idling when using the car battery. (For use with 12-V negative-grounded cars only.)


To the DC INPUT terminal of the GR-S55U
DC plug
BH-V5U
To car's cigarette lighter socket
Cigarette lighter plug
To car's cigarette lighter socket
AP-P1U
DC INPUT terminal

LOADING AND UNLOADING A VIDEO CASSETTE

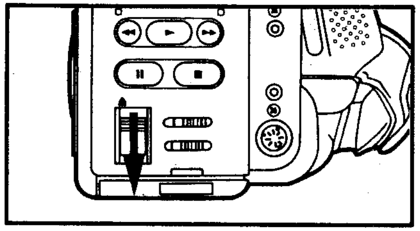
LOADING

1



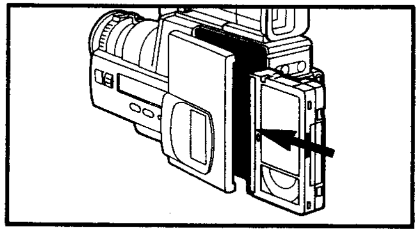
Slide the POWER switch to turn power on.

2



Open the cassette holder by pressing the EJECT button.

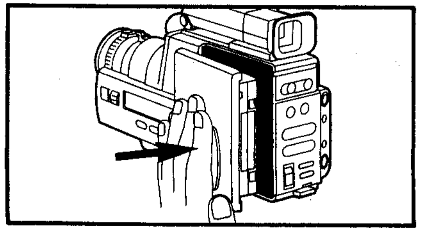
3



Insert the cassette with its printed arrow facing outward.

First remove tape slack, then insert the cassette correctly. See page 5.

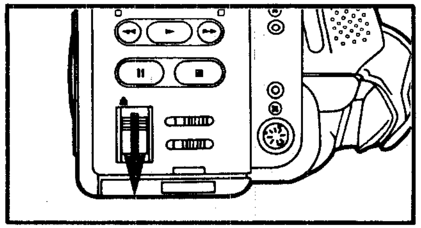
4



Close the cassette holder by pushing its center area.

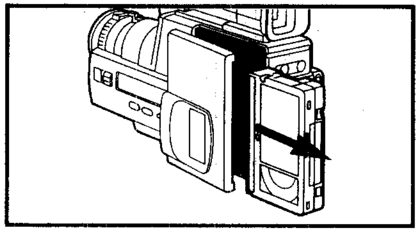
UNLOADING

1



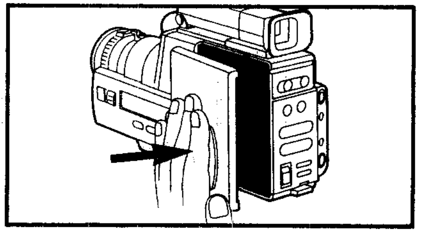
Make sure the unit is in the Stop mode. Press the EJECT button. The cassette holder will open.

2



Remove the cassette.

3



Close the cassette holder by pushing its center area.
- When not in use, switch off power.

Notes:
- Do not repeat loading and unloading of the cassette without running the tape, as this will slacken the tape, causing tape damage.

VIEWFINDER AND LCD INDICATIONS

The viewfinder and LCD display of the GR-S55U provides comprehensive on-screen indications for your reference.

Recorder status indications

Viewfinder	LCD
Stop mode	■
Play mode	▶
Pause mode	II
Rewind mode	◀◀
Fast forward mode	▶▶
Reverse shuttle search mode	▶◀◀
Forward shuttle search mode	▶▶▶
S-VHS mode	SVHS Displayed in S-VHS mode.

Viewfinder	LCD
Master Edit Control	▶ Blinking Blinks during dubbing. See page 31.
Rehearsal mode — EP —	■ MONITOR
Recording standby mode — EP —	II●
Recording mode REC EP REC	● EP ●
Quick Review mode	II● Blinking
Elapsed recording time 00:00	Elapsed recording time is displayed when REC TIME switch is set to ON. Reset when cassette is unloaded or RESET button is pressed. 1:00:00 indicates 1 hour has elapsed.

Camera status indications

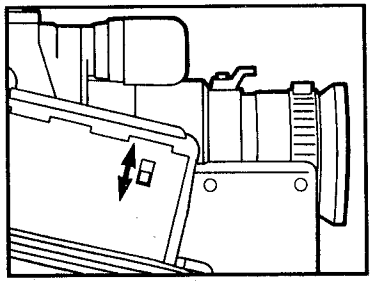
Viewfinder	LCD
White balance mode setting	
Automatic	W.BAL: ■■
Incandescent lighting	
●	W.BAL: ●
Fluorescent lighting	
⊖	W.BAL: ⊖
Outdoors	
●	W.BAL: ●
Focus mode	
Automatic	FOCUS: ■■
Manual focus	
▶	FOCUS: MANUAL
Focus behind subject	▶: turn focus ring clockwise until ■ appears.
■	■: indicates aimed-at subject is in focus.
Correct focus	◀: turn focus ring counterclockwise until ■ appears.
◀	● Auto-focus mode is indicated by none of these appearing on the screen.
Focus in front of subject	
Shutter mode	
Standard	SHUTTER: ■■
High-speed shutter (1/250, 1/500, 1/1000-second)	
S250	SHUTTER: 250
Fading mode	
FADER	Appears when fader funciton is reserved.

Warnings

Viewfinder	LCD
Battery warning	
BATTERY Blinking	■ Blinking
Condensation warning	
	● Blinking
Tape-end warning	
REC Blinking	● Blinking
Low-light warning	
LIGHT Blinking	
Low-contrast warning (Manual focus)	
▶■◀ Blinking	In the Manual-focus mode, if focus-aid indication is difficult because of low contrast, these focus-aid indicators appear simultaneously and blink.
Lithium battery warning	
▶E	When the battery is not in place or if it is worn out, no date/time or elapsed time reading will appear.

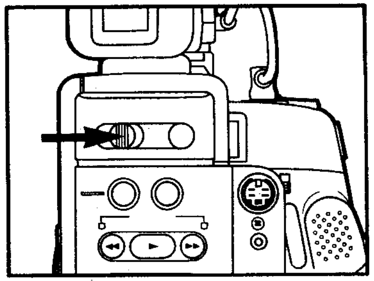
RECORDING OPERATION

1



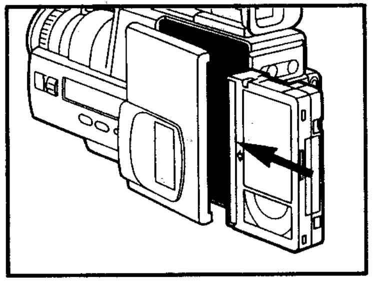
Set the S-VHS switch. (See page 9.)

2



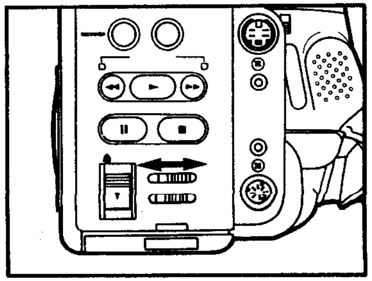
Slide the POWER switch to ON.

3



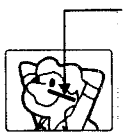
Insert a video cassette correctly (with its safety tab in place).

4



Set the tape speed to SP or EP.

[illegible]

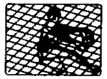
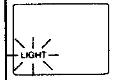
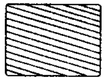
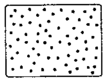


- ●A small area around the center of the picture, which varies depending on the zoom and focus conditions, is used to detect focus. (No actual indication provided on the screen.)

CAUTION

- ●Do not touch the focus ring while the auto-focus mechanism is in operation.
- ●Be careful not to cover the auto-focus sensor window, otherwise accurate focusing will not be possible.
- ●When not in use, do not leave the GR-S55U in the Auto-focus mode with power on; otherwise light entering the auto-focus sensor window will operate the auto-focus mechanism, consuming power.

Correct focus may not be obtained in the following situations. In such cases manual focusing should be performed to obtain proper focus.

 Two subjects at different distances overlap in the same scene.	 Low illumination where the underexposure indicator appears on the viewfinder screen.
 Slanted lines only.	 Minute patterns or identical patterns that are regularly repeated.

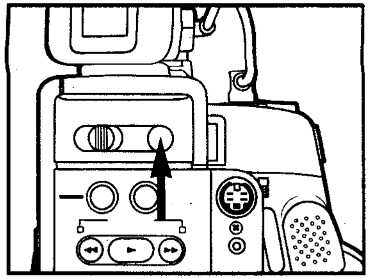
Note:

- ●If the lens and/or auto-focus sensor window are smeared with staint or blurred with condensation, accurate focusing is not possible. Keep them clean. If they become dirty, wipe with a piece of soft cloth. When condensation occurs, dry them by wiping with a soft cloth or wait for conditions in which they become dry.

[illegible]

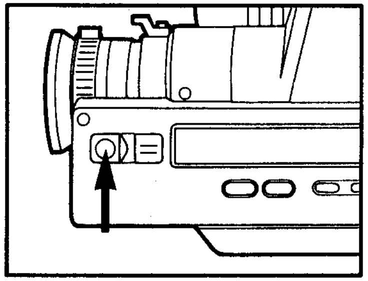
- ●To record longer on a single cassette, use the EP (Extended Play) mode.
- ●For EP recording, a higher-capacity battery pack may be used.
- ●SP: 20 minutes
  EP: 60 minutes

5



Press the REC Standby button. The unit enters the Recording Standby mode (as shown by the indicators in the viewfinder and on the LCD display).

6

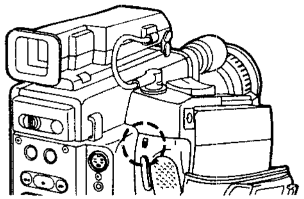


For full-auto operation, press the FULL AUTO button.

For manual override, use the W. BALANCE and FOCUS buttons.

- Press the W. BALANCE button so that the required symbol appears on the viewfinder and on the LCD display.
  - ✲: when the subject is illuminated by a halogen or tungsten lamp.
  - ▥: when the subject is illuminated by a fluorescent lamp.
  - ✲: when you shoot in the daytime outdoors.
- For manual focus, press the FOCUS button so that MANUAL is shown on the LCD display. A focus-aid indicator will appear in the viewfinder.

[illegible]



When the ALARM ON/OFF switch is set to on, an electronic alarm beeps when the Recording start/stop button is pressed to begin recording.
The electronic alarm beeps twice when the Recording start/stop button is pressed for record pause. This alarm helps prevent recording errors.

[illegible]

- Iris control is always automatic. Therefore, possible combinations of auto and manual functions are as follows:

Control / Function	FULL AUTO	W. BALANCE	FOCUS	FOCUS W. BALANCE
White balance	Auto	Manual	Auto	Manual
Focus	Auto	Auto	Manual	Manual
Iris	Auto	Auto	Auto	Auto

- Be careful not to cover the white balance sensor window, otherwise correct white balance will not be obtained in the auto mode.
- For high-speed electronic shutter, see page 24.

[illegible]

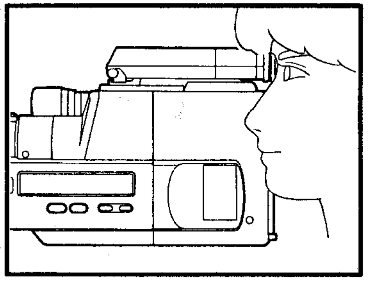
The accumulated recording time (elapsed time) can be displayed on the viewfinder.

1. Set the REC TIME ON/OFF switch to ON. The recording time is displayed on the viewfinder screen.
2. If you wish to reset it to "00:00", press the REC TIME RESET button.

Notes:

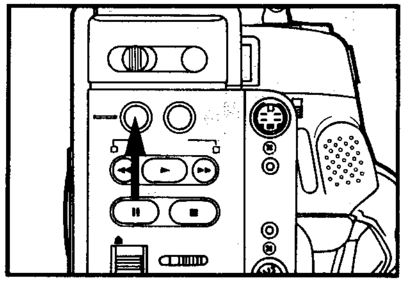
- When you wish to disengage the Elapsed Time Display mode, set the REC TIME ON/OFF switch to OFF.
- 1:00:00 indicates 1 hour has elapsed.
- Unloading the cassette also resets the display to "00:00".
- This convenience functions only when camera shooting is performed.

7



Determine the focus and composition by referring to the viewfinder image. For zooming, see page 26.
For date/time recording, see page 23.

Rehearsal

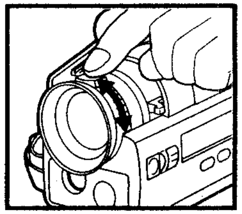


If you wish to rehease shooting angles, compose scenes, etc., without actually recording on the tape, press the MONITOR button, instead of REC. The aimed-at scene will appear on the viewfinder screen. For full-auto rehearsal, also press the FULL AUTO button. To engage the Recording Standby mode from rehearsal, press the REC button. To disengage the Rehearsal mode, press the STOP button.

- Rehearsal is possible whether a cassette is loaded or not.
- With a cassette loaded, rehearsal is not possible during rewind or fast forward.
- The power save circuit does not function during rehearsal. (For power save function, see page 22.)

[illegible]

If the manual focus mode is selected, proceed as follows:



① Zoom in on a subject by pressing the "T" button.
② Focus onto it by turning the focus ring.
③ Determine the composition by pressing the "W" button.

Caution:
Covering the white balance sensor while manually focusing will result in poor color reproduction.

Note:

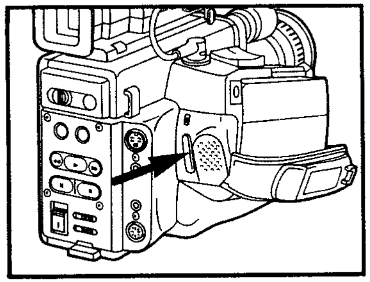
- When you use the manual focus mode, be sure to focus the lens in the maximum telephoto position. If you focus in on a certain subject in the wide-angle position, sharply-focused images cannot be obtained when zoomed up because the depth of field is reduced at longer focal lengths.

FOCUS INDICATORS

The focus indicators on the viewfinder screen function in the manual focus mode.

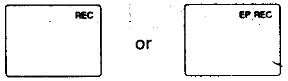
Condition	Indication	Corrective operation
Focus point behind the subject	▶	Turn the focus ring clockwise until the center square lights.
Correct focus	■	Keep the focus ring in the same position.
Focus point in front of the subject	◀	Turn the focus ring counterclockwise until the center square lights.
Indication not possible because of low contrast	—▶■◀—	Estimate the subject distance and set the focus ring referring to the distance scale on it.

8

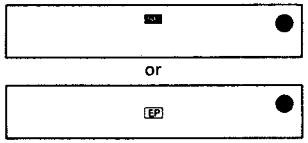


Press the start/stop button.

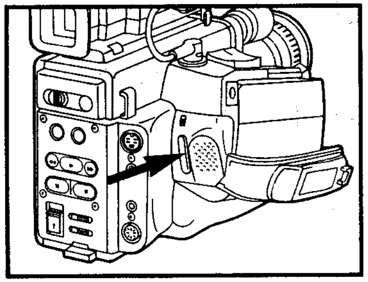
- This causes REC or EP-REC to appear on the viewfinder screen, showing that recording is actually taking place.



- The LCD display shows:



9



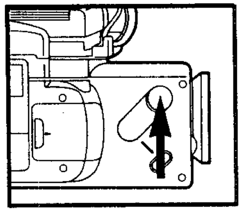
To stop recording temporarily, press the start/stop button once again.

10

To restart recording, press the start/stop button.

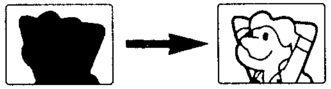
- For a pause longer than 3 minutes, press the POWER switch to OFF.
- If the Recording Standby mode continues for longer than about 5 minutes, the unit switches itself off automatically. To restart recording, turn the power on. This makes clean assembled recordings possible even after a long pause.

[illegible]



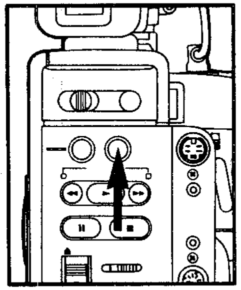
- Press the BLC button. While it is being pressed, the iris is 1−2 f-stops wider than that adjusted automatically.

When excessive lighting is located in back of the subject, correct exposure may not be obtainable. To compensate for this, use BLC.



Without BLC With BLC

Quick Review function



- If you want to review the end of the last recording for confirmation, press the QUICK REVIEW/EDIT button from the Recording Standby mode; the tape will be rewound for about 2 seconds for program time and played back automatically for this section, after which it will stop in the Recording Standby mode for the next shot.

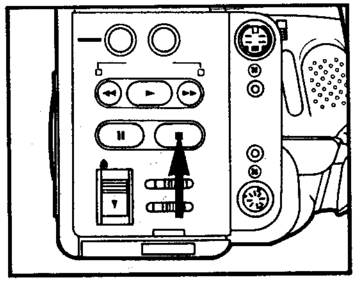
Notes:

- The TRACKING control should be at its center position.
- Distortion might occur when playback starts. This is normal.

Assemble recordings

- Repeating steps 8 and 9 produces assemble recordings. In playback, the picture may be slightly distorted at the point between separate takes. This is not due to any defect of the unit.
- If recording is restarted from the Stop mode, a few frames of the previously recorded picture is replaced with a new recording. To avoid this, follow the technique described in "Assemble Recording Technique-2" on page 22.

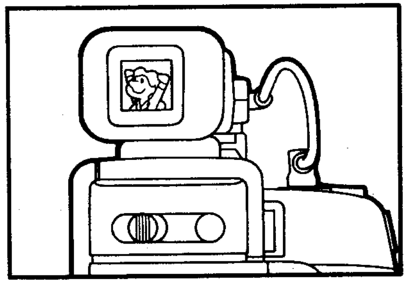
11



To end recording, press the STOP button.

- After making sure that the tape has stopped, press the POWER switch to OFF.

[illegible]



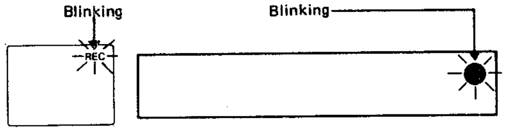
- Rewind the tape to a point from which you want to check the recording.
- Press the PLAY button, and you can view the playback picture on the viewfinder screen.

Notes:

- Pressing the PAUSE/STILL button during playback stops the picture on the viewfinder screen.
- Shuttle search is also possible in both directions.

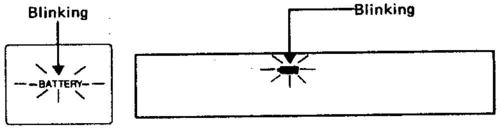
[illegible]

Tape-end warning



- The recording indicator blinks on the viewfinder screen and the LCD display a few minutes before the end of the tape.
- When the end of the tape is reached during recording, the Stop mode engages automatically.

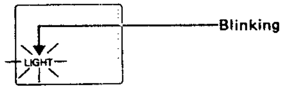
Battery warning



Viewfinder LCD Display

- When the battery power is coming to an end, a battery warning indication appears both in the viewfinder and the LCD display. Replace the battery pack with a fully charged one.
- After these indications appear, the power turns off automatically. In this state, however, pressing the POWER switch while holding EJECT button pressed turns the power on and ejects the cassette.

Low-light warning

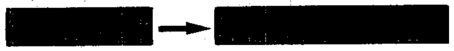


- If the blinking "LIGHT" indicator appears on the viewfinder screen, the amount of light is insufficient. Increase the lighting.

POWER SAVE AND TAPE PROTECTION CIRCUIT

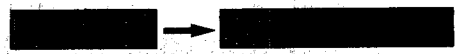
- To save bettery power, the GR-S55U (when battery-operated) switches itself off automatically in the following situations:
  (1) When left for longer than 5 minutes in the Stop mode.
  (2) When left for longer than 5 minutes in the Recording Standby (Record-Pause) mode.
- To protect the tape, the GR-S55U (regardless of whether battery-operated or AC-powered) releases tape tension slightly and switches itself off automatically if left for longer than 5 minutes in the Recording Standby (Record-Pause) mode.
- For the same reason, the GR-S55U enters the Stop mode and switches itself off automatically if left for longer than 5 minutes in the Still (Play-Pause) mode.

Battery operation

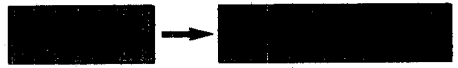


5 minutes

Battery/AC operation



5 minutes



5 minutes

ASSEMBLE RECORDING TECHNIQUE — 1 (To replace the battery pack during recording)

1 If the battery warning appears in the viewfinder or the LCD display while recording, stop recording by pressing the POWER switch to OFF, not the STOP button.

2 Replace the battery pack with a charged one.

3 Press the POWER switch to ON.
- The unit will be in the Recording Standby mode.

4 Press the recording start/stop button to start recording.

ASSEMBLE RECORDING TECHNIQUE — 2 (To record onto a partially recorded tape)

1 Play back the tape to a point where you wish a new recording to start.
- Use the SHUTTLE SEARCH button for faster location.

2 Press the PAUSE/STILL button at the located point.
- The unit will enter the Still mode.

3 Press the REC button.
- The unit will enter the Recording Standby mode.

4 Press the recording start/stop button to start recording.

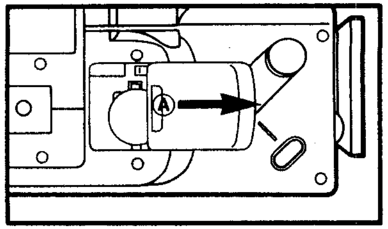
Note:
Some picture distortion may occur at the transition point. This is not due to any defect of the unit.

RECORDING THE DATE/TIME

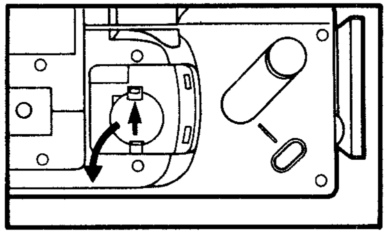
Warning on lithium battery
- **Dispose of used battery promptly.**
- **Keep away from children.**
- **Do not disassemble and do not dispose of in fire.**

Battery insertion
This battery powers the date/time function.
1. Slide the cover off the CLOCK BATTERY compartment on the bottom of the VideoMovie by pressing lightly on the section labelled Ⓐ in the diagram.
2. Insert the provided lithium battery **with the plus (+) side up.**
3. Slide the cover on unit it clicks.

Notes:
- Switch off the unit's power before inserting the battery.
- When the battery is inserted, the clock will begin functionning.



Battery replacement
The battery lasts for about one year. When the lithium battery warning (▶E) appears in the viewfinder, this battery needs to be replaced. Obtain a new CR 2025 lithium battery and follow the following procedure.
1. Remove the battery by pressing the knob in the direction of the arrow.
2. Insert the new CR 2025 **with the plus (+) side up.**
3. Slide the cover back until it clicks.



Note:
Switch off the unit's power before removing old battery.
Repalce battery with Matsushita type CR 2025 only. Use of another battery may present risk of fire and explosion.

Date/time setting
Before adjusting the date and time for the first time or after replacing the batteries, JAN. 1.87 blinks in the viewfinder, indicating the clock needs to be set.

① Switch the unit's power on, JAN. 1. 87 will blink in the viewfinder. Press MONITOR button to enter rehearsal mode.
② Press the DATE TIME SELECT button — the year blinks.
③ Press the DATE TIME SET button to choose the correct number.
④ Press the DATE TIME SELECT button to select the next item to change, with the item selected changing in the following sequence:

→Year → Month → Day → Hour → Minute → Finish Adjustment

⑤ Repeat steps ② and ③ to set all items. After the minute setting has been performed, press the DATE TIME SELECT button, and items will cease blinking. For the auto date record mode, the auto date record reserve indicator will appear.

Date/time recording
The date, time, or date and time can be displayed and recorded according to the selected mode. Press the DISPLAY SELECT button to cycle through the modes in the following order:

→ Auto date record reserve → Date display → Date/time display → Time display

- When the auto-date-record function is selected, "–.–.–" appears in the viewfinder, until recording begins. As long as this function is chosen, the date will be automatically displayed and recorded for 5 seconds following the first operation of the recording start/stop button after the power is turned on.
- Auto date record reserve indication will cease to be displayed about 5 seconds after the date is recorded if the DATE/TIME REC ON/OFF button is set on OFF unless power is provided again.

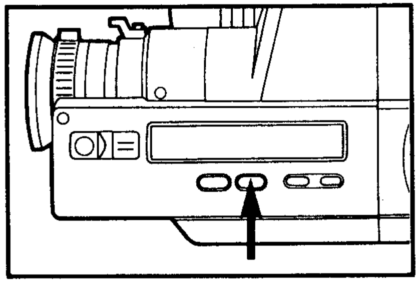
Date/time recording indications

Auto date record		Date display	Date/time display	Time display
–.–.– Auto date record reserved	DEC. 31.87 Auto date record executed	DEC. 31.87	DEC. 31.87 AM 12:30	AM 12:30

VARIABLE-SPEED ELECTRONIC SHUTTER

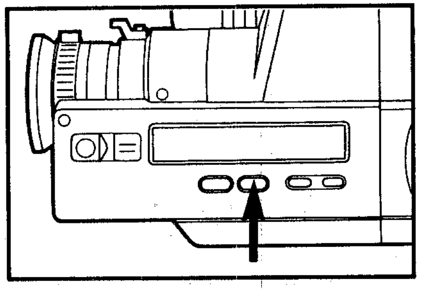
The GR-S55U is equipped with a selectable high-speed shutter that allows better recording of quick movements for sharp, clear stills or slow-motion playback. Select it when taping fast-action shots that you will want to play back later in still or slow-motion mode.

1



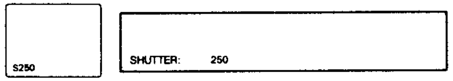
Press the SHUTTER button to switch to the desired speed electronic shutter. This can be done while recording or in any other mode. It continues until switched to another speed.

2



When finished recording the fast-action scene, switch back to the standard shutter speed by pressing the SHUTTER button until STD appears on the LCD display.

When selected, the High-Speed Shutter mode is indicated on the viewfinder screen and LCD display.



Note:
The High-Speed Shutter mode requires slightly more subject illumination than the Standard Shutter mode. Therefore, the low-light warning may blink in the viewfinder. If so, switch to the Standard Shutter mode.

The Standard Shutter mode is indicated by STD on the LCD display.

SHUTTER: STD

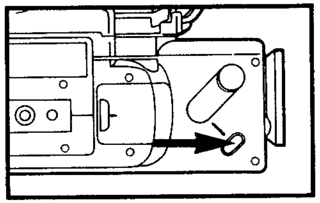
SPECIAL TECHNIQUES

Fade-in/out

The GR-S55U is equipped with an automatic fade mechanism for allowing smooth fade-in and fade-out with a white-colored blank screen. Audio also fades in sync with video.

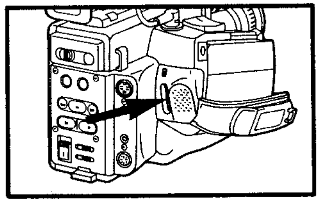
Automatic fade-in

1



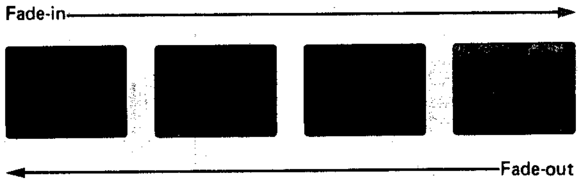
Determine the composition in the Recording Standby mode and press the FADER button to reserve the fade-in mode.

2



Press the start/stop button. The screen will quickly become white and recording begins. When the start/stop button is released, fade-in will start. It will be completed in about 5 seconds. If the start/stop button is not released when pressed, the white picture will remain on the screen and be recorded.

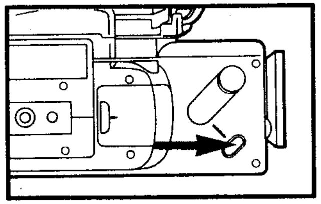
FADER is displayed in the viewfinder when fading is reserved, and continues to be displayed until fading in or out is completed.



Automatic fade-out

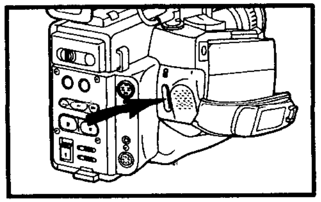
1 Start shooting as usual.

2



Press the FADER button to reserve the fade-out mode.

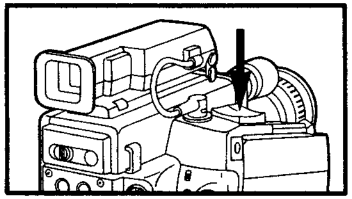
3

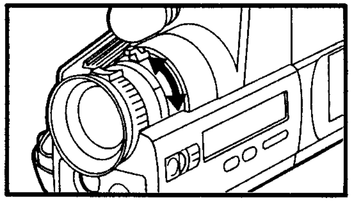


Press the start/stop button. Fade-out will start and be completed in about 5 seconds. When completed, Recording standby mode is entered. If the start/stop button is not released when pressed, the final white picture remains on the screen and continues to be recorded, until the button is released.

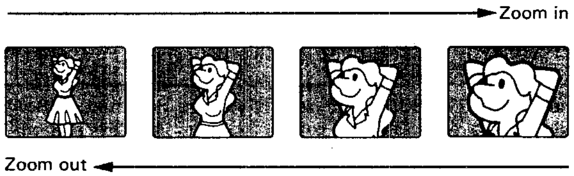
Zooming

When the focal length of the lens is varied by turning the zoom ring, the image appears to come nearer to or retreat from the viewer.





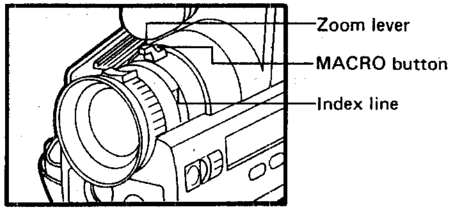
Power zooming
Press "T" for zooming in and "W" for zooming out. Two zooming speeds are available. For slow-speed zooming, press lightly. For regular-speed zooming, press firmly.



Manual zooming
Rotate the zoom lever downwards for zooming in and upwards for zooming out.

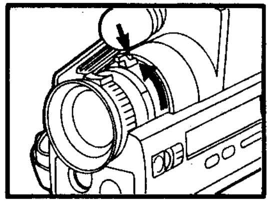
Macro Shot

Normally, focusing is possible only for subjects that are more than 1.1 m (3.6 ft) away from the camera. By setting the lens to the Macro mode, it is possible to manually focus in on any subject located inside that limit, right up to the front of the lens. The MACRO and ZOOM ranges combined give continuous shooting ability from close-up to infinity.



Engage MACRO

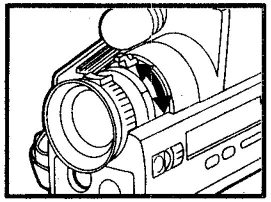
1



While pressing in the macro button, turn the zoom lever in the direction of the arrow until the number "9" on the zoom ring passes the index line.

Focus

2

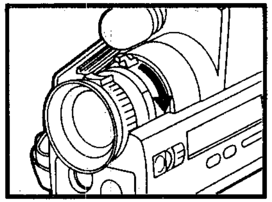


Focus by turning the zoom lever slowly.

- Use the zoom lever to focus in the MACRO range.
- Turning the focus ring will slightly alter the angle of view of the lens.
- *The auto-focus mechanism does* not function during macro shooting.

Release MACRO

3



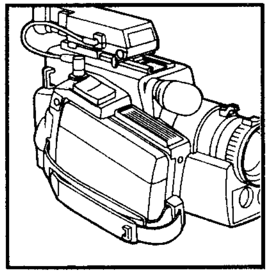
To release the Macro mode, turn the zoom lever in the direction of the arrow until the number "9" passes the index line.

PLAYBACK

The GR-S55U permits playback of recorded SVHSC or VHSC video cassettes.
For connections refer to pages 29 and 30.

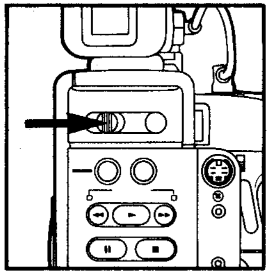
Preparations
- With a television equipped with audio/video input connectors, set the television's TV/VIDEO switch to VIDEO.
- With a regular television receiver, set the antenna select switch of the RF-V3U RF unit to VIDEO and the TV receiver's channel selector to your video channel (3 or 4).

1



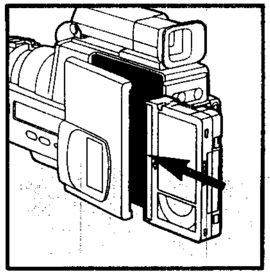
Connect a power supply unit. (Battery or AC operation: see page 13.)

2



Press the POWER switch to ON.

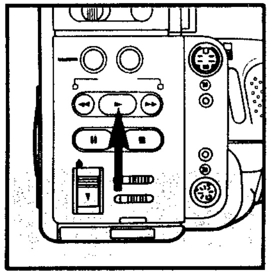
3



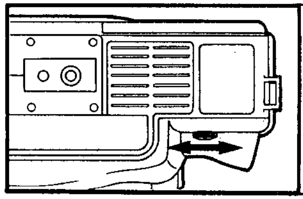
Insert a pre-recorded cassette.

First remove tape slack, then insert the cassette correctly. See page 5.

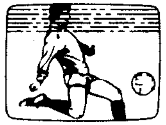
4



Press the PLAY button. Playback will start.
- The SP/EP switch may be in either position. The SP or EP mode recording is automatically detected and played back at a correct speed respectively.
- When the end of the tape is reached during playback, the Rewind mode engages automatically.

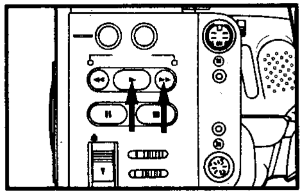


Tracking adjustment
If noise bars appear on the screen, adjust the TRACKING control. Turn it slowly in either direction to minimize noise bars. After playing a particular tape, return the TRACKING control to the center position.



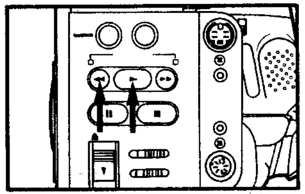
Shuttle Search

Fast-speed playback in the forward direction



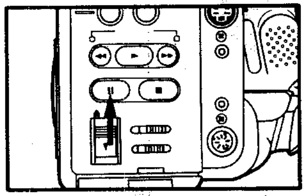
Press the FF button in the Play mode. Playback will be speeded up to 3 times normal speed in SP mode, 7 times normal speed in EP mode, as long as the button is being pressed.

Fast-speed reverse playback



Press the REW button in the play mode. The tape will be played back in the reverse direction at 3 times normal speed in SP mode, 7 times normal speed in EP mode, as long as the button is being pressed.

Still playback



Press the PAUSE/STILL button during playback. The picture will stop on the screen.

- After about 5 minutes of still playback, the unit enters the Stop mode automatically for tape protection and switches itself off.

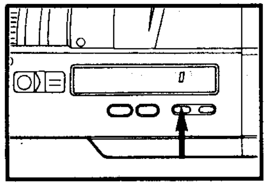
Notes

- Noise may appear on the screen during Shuttle Search and still playback. This is not due to any defect of the unit.
- Pictures may become monochrome during Shuttle Search in the SP mode. This is not due to any defect of the unit.

Counter Memory Function

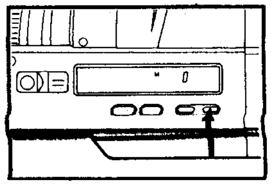
The GR-S55U incorporates a counter memory mechanism which facilitates locating a specific tape segment.

1



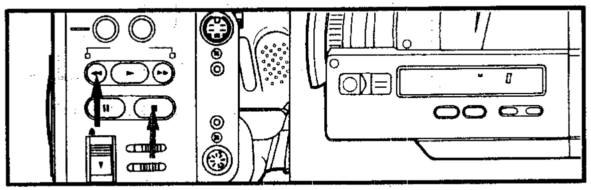
Press the RESET button to reset the counter to "0".

2



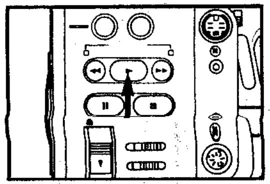
Press the MEMORY button. The "M" mark will appear.

3



After recording or playback, press the STOP button, then the REW button. The tape will automatically stop at the counter reading of around "0".

4



Press the PLAY button to start playback.

Notes:

- The counter memory function is effective in the Fast Forward mode as well.
- To cancel the memory function, press the MEMORY button.
- When the power supply unit is disconnected, all indications on the LCD display disappear and the counter memory function is instantly cancelled.

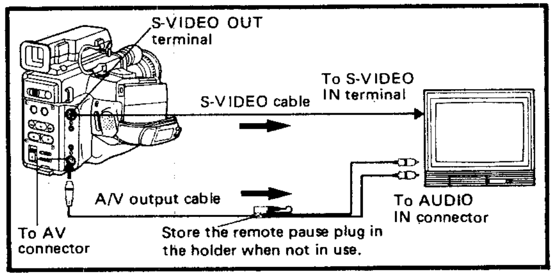
CONNECTIONS FOR PLAYBACK

The GR-S55U offers two sets of output terminals: one for the regular composite video signal in which the luminance (Y) and chrominance (C) signals are mixed together, and the other for the separated Y/C signals.

Connection to a television with S-VIDEO input

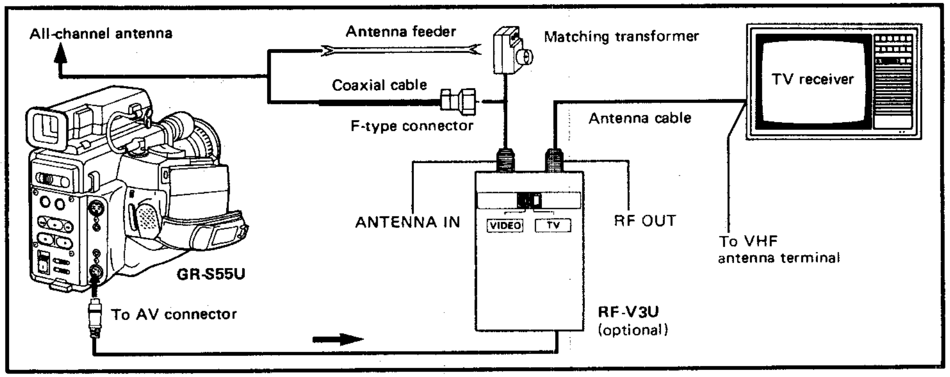
When your television is equipped with an S-VIDEO input (separated Y/C signals) terminal, this is ideal to enjoy the best possible S-VHS picture, because no interference occurs between the liminance and chrominance signals.

- Connect the S-VIDEO OUT terminal of the GR-S55U to the S-VIDEO IN terminal of your television using provided S-VIDEO cable.
- Connect AV connector of the GR-S55U to the AUDIO IN connector of the television using the provided A/V output cable.
- Set the television to the AV mode.

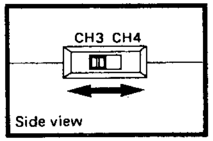


Connection to a television not equipped with audio/video input connectors

For this situation, use the RF-V3U RF unit (optional).



1



Set the output channel select switch of the RF-V3U to CH3 or CH4.

- The RF unit permits playback of video and audio recordings through a TV receiver. The signals from the RF unit are viewed through a vacant channel not used for broadcasting in your area.
- The RF unit has been set to CH3 prior to shipment. Reset the channel to CH4 (using a screwdriver) in areas where channel 3 is employed for broadcasting.
- This is your video channel. To view video cassettes, always set the TV channel selector to either channel 3 or 4.

2 Remove the antenna cable from the TV receiver.

3 Connect the antenna cable to the ANTENNA IN terminal of the RF unit.
Connect the RF OUT terminal of the RF unit to the 75-ohm coaxial antenna terminal of the TV receiver using the provided antenna cable.

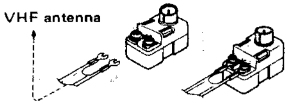
4 Connect the VIDEO/AUDIO INPUT cable of the RF unit to the AV connector of the GR-S55U.

PRECAUTIONS FOR RF-V3U

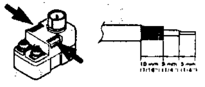
- For exclusive use with the VideoMovie.
- Do not disassemble or remodel the RF-V3U.
- Do not expose it to strong shocks.
- Unplug the connected equipment during lightning storms.
(Never touch the antenna cable.)

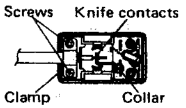
How to affix the matching transformer to your VHF antenna cable

- If your VHF antenna cable is a 300-ohm flat feeder, connect the two lugs to the screws in an ordinary manner.



- If your VHF antenna cable is a 75-ohm coaxial cable, proceed as follows:





① Press both side tabs inward and slide the cover off.
② Strip the coaxial cable with a pair of wire strippers, a knife, or the like as shown.
③ Remove the collar and put it on the pole inside the cover.
④ Loosen the screws for the clamp and insert the stripped cable so that the braided portion is positioned under the clamp.
⑤ Insert the stripped end (core conductor) of the cable from above into between the knife contacts.
⑥ Tighten the screws. ⑦ Replace the cover.

OPERATION

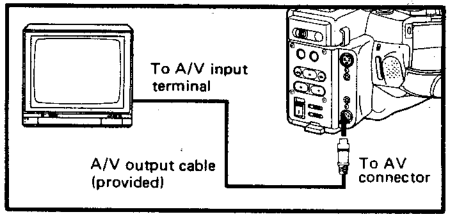
Viewing video cassettes being played back with the GR-S55U

To view video cassettes or to monitor the recording, set the VIDEO/TV switch of the RF unit to VIDEO and the TV channel selector to the channel corresponding to the RF output channel (3 or 4).

Viewing television programs

Set the VIDEO/TV switch to TV, and the TV receiver will function as usual.

Connection to a television equipped with audio/video input connectors



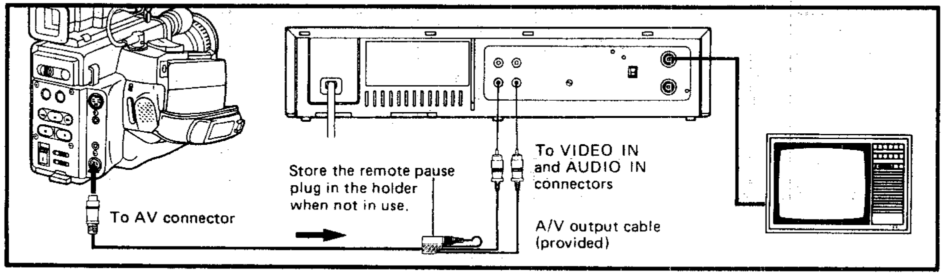
- Simply connect the AV connector of the GR-S55U to the VIDEO and AUDIO IN connectors of the television using the provided A/V output cable.
- The provided A/V output cable can be extended by 5 m (16 ft) with the optional VC-P1U A/V extension cable.
- Use the VIDEO (or A/V) mode specified on the television, instead of tuning to channel 3 or 4

TAPE DUBBING OR EDITING

Dubbing onto a standard recorder

Connection

1. Set the DUBBING ON/OFF switch to ON.
2. Connect the AV connector of the GR-S55U to the AUDIO and VIDEO IN connectors of the video recorder using the provided A/V output cable.
3. Connect a television to the video recorder to monitor the picture while dubbing.


To AV connector
Store the remote pause plug in the holder when not in use.
To VIDEO IN and AUDIO IN connectors
A/V output cable (provided)

Operation

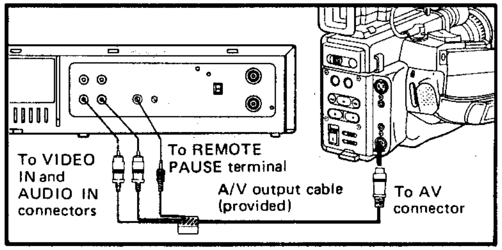
- Put the GR-S55U in the Play mode and the connected recorder in the Record mode to copy the recording. To edit out unwanted material, press the recorder's PAUSE button.

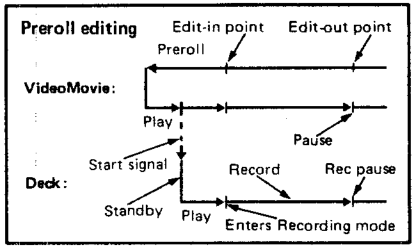
Using the Master Edit Control System

This function is available when using designated JVC video decks equipped with a remote pause terminal. The Master Edit Control system allows control of the connected deck using the VideoMovie's controls, preroll editing for edits free of transition-point gaps and distortion.

Connection

1. Set the DUBBING ON/OFF switch to ON.
2. Connect the AV connector of the GR-S55U to the AUDIO and VIDEO IN connectors and remote pause terminal of the video recorder. (When using an S-VHS deck, use the S-VIDEO cable for the video signal.)
3. Connect a television to the video recorder to monitor the picture while dubbing.


To VIDEO IN and AUDIO IN connectors
To REMOTE PAUSE terminal
A/V output cable (provided)
To AV connector



Operation

Dubbing can be initiated from Stop mode or Still mode.

- **For dubbing a tape**

1. Switch on the VideoMovie's power.
2. Switch on the deck's power.
3. Put the deck in the Record-Pause mode.
4. Press the QUICK REVIEW/EDIT button to start editing. The tape is loaded, then dubbing starts.
5. Tape stop when the PAUSE/STILL or STOP button of the GR-S55U is pressed or counter reaches "M, 0".
6. Deck stops recording and enters the Record-Pause mode

- **For editing**

1. Switch on the VideoMovie's power.
2. Turn on the deck's power.
3. Put the deck in the Record-Pause mode.
4. Locate the edit-in point via play, fast-forward, rewind, or Shuttle Search, and press the PAUSE/STILL button.
5. Press the QUICK REVIEW/EDIT button to start editing.
6. Tape stops when the PAUSE or STOP button of the GR-S55U is pressed or counter reaches "M, 0".
7. Deck stops recording and enters the Record-Pause mode.

Note:

When the EDIT button is pressed from the Still mode, the tape is rewound for 5 seconds of program time. The Play indicator blinks on the LCD display to indicate rewinding is taking place. After prerolling, first the prerolled section is played back for stabilizing tape run. During playback of the GR-S55U, it gives a start signal to the deck standing by in the Record-Pause mode to start playback and then to enter the Recording mode at edit-in point, while the GR-S55U continues playback. The Master Edit Control indicator appears on the LCD display during dubbing.

Setting the edit-out point using counter memory

In the above procedures, counter memory can be used to set the edit-out point before editing takes place, so that the VideoMovie automatically stops playback at the designated point. If the edit-out point is to be set in this way, do so following step 3 of the dubbing operation.

1. Locate the desired edit-out point on the VideoMovie's tape.
2. Press the VideoMovie's PAUSE/STILL button.
3. Reset the VideoMovie's counter to "0".
4. Press the VideoMovie's counter MEMORY button.
5. The VideoMovie enters the Pause mode, and the deck enters the Record-Pause mode.

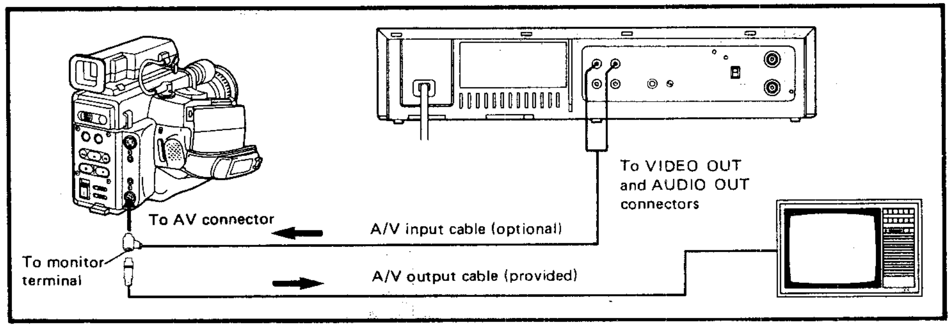
Note:

When the tape reaches the preset edit-out point during the dubbing operation, it may stop slightly before or after the designated point on the tape.

[illegible] dubbing from [illegible] recorder

Connection

1. Connect the AV connector of the GR-S55U to the AUDIO and VIDEO OUT connectors of the video recorder using the optional VC-V012U A/V input cable.
2. To monitor the picture while dubbing, insert the A/V output cable (or the RF unit's plug, depending on the type of television) into the monitor terminal provided on the plug of the A/V input cable. Viewfinder monitoring is also possible (no mode indication appears).


To VIDEO OUT
and AUDIO OUT
connectors
To AV connector
A/V input cable (optional)
To monitor terminal
A/V output cable (provided)

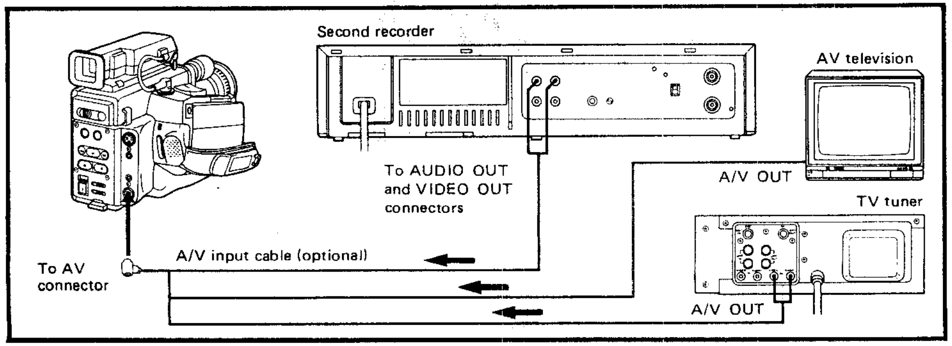
Operation

- When the A/V input cable is plugged into the AV connector of the GR-S55U, the external source mode is automatically engaged.
- Put the video recorder in the Play mode and the GR-S55U in the Record mode; pressing the REC Standby button engages the Recording Standby mode. Press the Play button to start recording.
- To edit out unwanted material, press the PAUSE/STILL button.

TV PROGRAM RECORDING

Connection

Connect the AV connector of the GR-S55U to the AUDIO and VIDEO OUT connectors of an AV television, a second recorder or a TV tuner using the optional VC-V012U A/V input cable.


Second recorder
AV television
To AUDIO OUT
and VIDEO OUT
connectors
A/V OUT
TV tuner
To AV connector
A/V input cable (optional)
A/V OUT

Operation

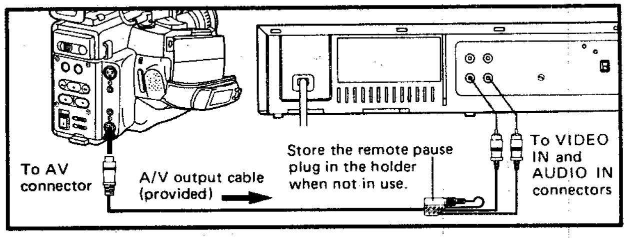
- The external source mode is automatically engaged.
- Tune the AV television, video recorder or the TV tuner to a desired channel and put the GR-S55U in the Record mode by pressing the REC Standby button and then the PLAY button.
- Viewfinder monitoring is possible (no mode indication appears).

USING THE GR-S55U AS A VIDEO CAMERA

For continuous documentation of longer events, the GR-S55U can be used as an independent video camera in combination with either a deck-type or portable video recorder.

Using a recorder not equipped with a remote pause terminal

- Connect the AV connector of the GR-S55U to the AUDIO and VIDEO IN connectors of the video recorder using the provided A/V output cable.


To AV connector
A/V output cable (provided)
Store the remote pause plug in the holder when not in use.
To VIDEO IN and AUDIO IN connectors

Operation

1. Press the MONITOR button. The camera output signal is now available via the A/V output cable.
2. Put the connected recorder in the Record mode. Recording will start. Tape start/stop should be controlled with the recorder's buttons.

Note:

- In this configuration, it is possible to obtain a continuous recording and an edited-out recording of the same event simultaneously, because the GR-S55U's start/stop button only controls the tape inside itself while another tape loaded in the connected recorder continues running. To record on the GR-S55U's tape, follow the same recording procedure as mentioned before: press REC standby and then the start/stop button.

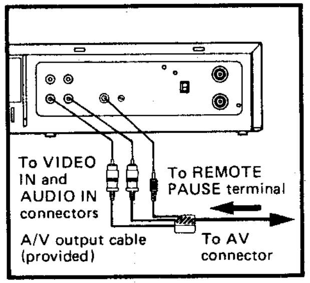
Using a recorder equipped with a remote pause terminal or with a 10-pin camera connector

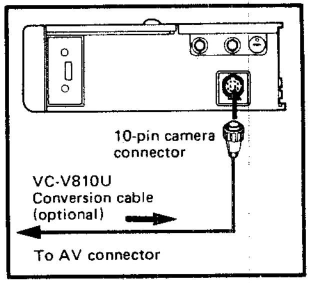
For a recorder with a remote pause terminal

- Connect the AV connector of the GR-S55U to the AUDIO and VIDEO IN connectors and remote pause terminal of the video recorder using the provided A/V output cable.

For a recorder with a 10-pin camera connector

- Connect the AV connector of the GR-S55U to the 10-pin camera connector of the second recorder using the optional VC-V810U conversion cable.


To VIDEO IN and AUDIO IN connectors
To REMOTE PAUSE terminal
A/V output cable (provided)
To AV connector


10-pin camera connector
VC-V810U
Conversion cable
(optional)
To AV connector

Operation

1. Press the MONITOR button.
2. Put the connected recorder in the Recording Standby (Record-Pause) mode.
   - The viewfinder's mode indication corresponds to the state of the connected recorder.
3. Press the start/stop button of the GR-S55U to start recording.

Note:

- To record on the GR-S55U's tape as well, press the REC Standby button and then the start/stop button.

Precautions

- Power is not supplied to the GR-S55U from the connected VCR. Independent power supply is required for both the GR-S55U and the VCR.
- If you stop recording by pressing the GR-S55U's start/stop button, the connected VCR also stops in the Pause mode. However, the pause command signal is not delivered to the connected VCR in the following cases and, therefore, the VCR will start automatically:
  (1) when the GR-S55U is switched of or its battery becomes discharged.
  (2) when the VC-V810U cable is disconnected.
  Therefore, before replacing the battery or tape for the GR-S55U, put the connected VCR either in the STOP or REC LOCK mode.

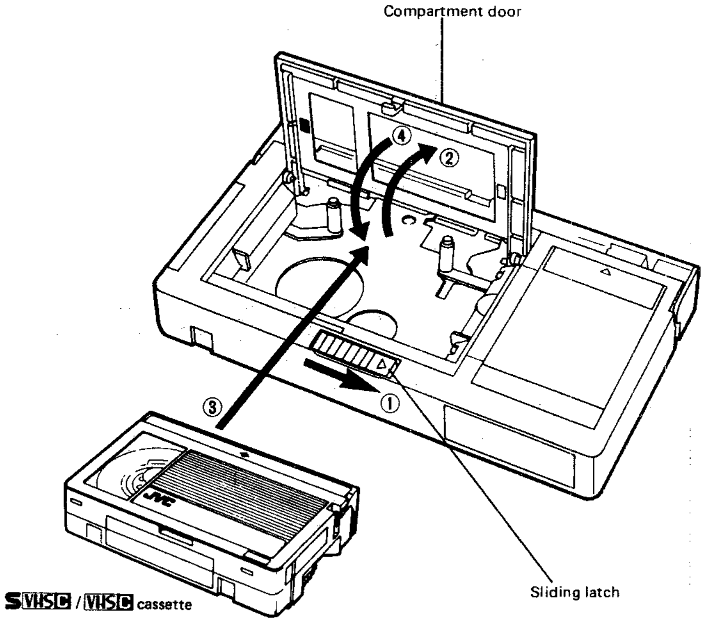
USING THE CASETTE ADAPTOR (provided)

The VHS compact video cassettes recorded with the GR-S55U can be played back with a standard VHS machine by using the provided C-P5U Cassette Adapter.

(A compact video cassette installed in the cassette adapter is fully compatible with a standard VHS machine for both recording and playback.)

Note: Cassette tapes marked S-VHS-C can only be used with the C-P5U Cassette Adapter.

- **C-P5U Cassette Adapter**
  Being battery-operated, the C-P5U performs tape loading and unloading automatically.

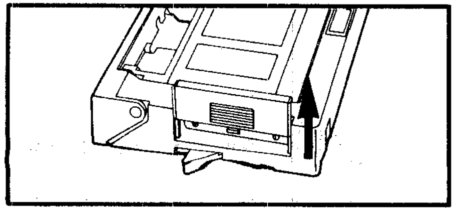


For more details refer to the instruction manual of the C-P5U.

Note:
- During special-effects playback (slow motion, still frame, etc.) the picture may vibrate or noise bars may appear on the screen.

Inserting the battery into the cassette adapter

Remove the battery cover by sliding it up.
Install one "AA" battery and reattach the cover.

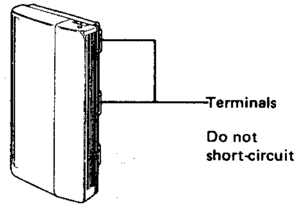


CHARGING THE BATTERY PACK

To charge the battery pack, use the exclusive AC power adapter/battery charger AA-V5U (provided/optional) or car battery charger BH-V5U (optional).

A WORD ON THE EXCLUSIVE BN-V5GU/V6GU BATTERY PACKS

The BN-V5GU/V6GU are nickel-cadmium batteries. Give attention to the following to make the most of their characteristics.



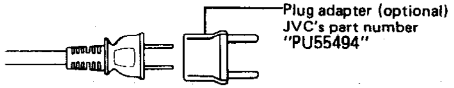
Temperature ranges:
The recharging time is based on room temperature of 20°C (68°F).
The lower the temperature, the longer the recharging time.
For charging: 10°C to 35°C (50°F – 95°F)
For operating: -10°C to 40°C (14°F – 104°F)
For storing: -10°C to 30°C (14°F – 86°F)

The battery pack has been kept in the uncharged state for shipment. Therefore, before use, charge it.

- To avoid a hazard:
  1. Do not burn the battery.
  2. Do not short circuit the terminals.
  3. Do not modify or disassemble the battery.
  4. Use only specified chargers.
- To prevent damage and prolong service life:
  1. Avoid dropping, and unnecessary shocks.
  2. Avoid repeated charging without first discharging.
- This battery has a limited service life:
  Near the end of its service life, when it begins to deliver less recording time per charge, purchase a replacement.
- It is normal for the battery to feel warm after charging or use.
- This is a chemical reaction type battery; its properties are best maintained under the following conditions:
  1. Optimum charging takes place at temperatures between 10°C (50°F) and 35°C (95°F). Cooler temperatures impede chemical reaction. Warmer temperatures can prevent complete charging.
  2. Store in a cool dry place. Extended exposure to high temperatures will increase natural discharge and shorten service life.
  3. Total natural discharge may occur during long storage periods (uncharged storage is preferable; recharge one day before use).
  4. Remove from charger or powered unit when not in use; some units draw current even when switched off.

PRECAUTIONS FOR AA-V5U
- If used near a radio, the provided AA-V5U AC power adapter/battery charger may interfere with reception.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.
- Do not apply shocks to the unit.
- Do not subject the unit to direct sunlight.
- Avoid using the unit in extremely hot or humid places.
- Avoid using the unit in places subject to vibrations.

When using the AA-V5U in areas other than the USA.
USING HOUSEHOLD AC PLUG ADAPTER
In case of connecting the unit's power cord to an AC wall outlet other than American National Standard C73 series type, use an AC plug adapter, called a "Siemens Plug", as shown below.
For this AC plug adapter, consult your nearest JVC dealer.



Recording time for the GR-S55U

BN-V5GU 20 min.	BN-V6GU 50 min.

- The recording time per charge is influenced by the duration of recording standby, frequency of zooming, etc. It is safer to have spare battery packs.

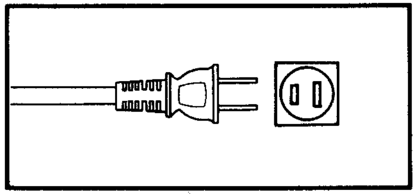
Charging procedure

Charging time

BN-V5GU 50 min.	BN-V6GU 70 min.

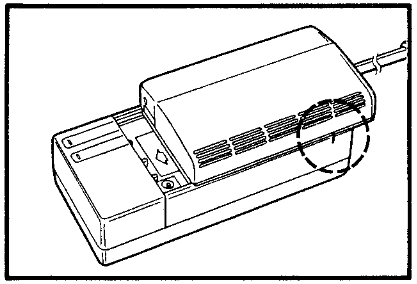
- The charging time differs depending on the ambient temperature and the condition of the battery pack.

1



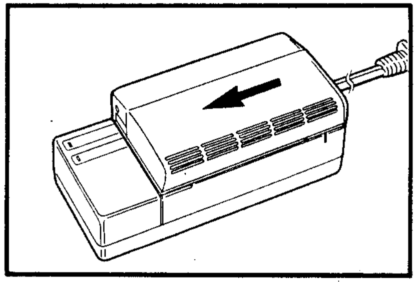
Connect the AC power cord to a wall outlet.
(The POWER indicator will light.)

2



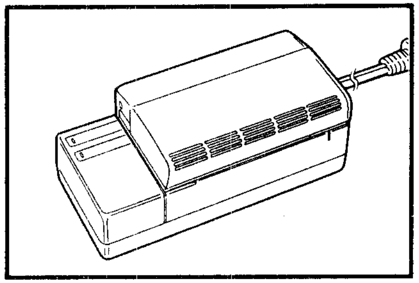
Align the marks on the battery pack and adapter.

3



Slide the battery pack in the direction of the arrow until it locks in place.

4



When charging is completed, the CHARGE indicator goes out.

5 Unplug the AC power cord.

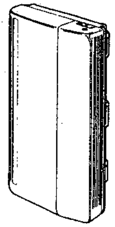
Note:
The optional BH-V5U Car Battery Charger can charge the batteries from a car battery. For details refer the instructions of the BH-V5U.

SYSTEMS FLEXIBILITY

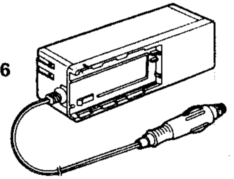
For maximum enjoyment, make the most of the provided or optional accessories depending on the situation.

① **Regular battery pack**
BN-V5GU
☞ **Page 13**

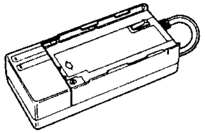
② **High-capacity battery pack**
BN-V6GU
☞ **Page 13**



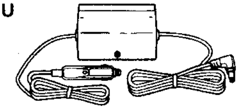
③ **Car battery charger**
BH-V5U
☞ **Pages 13, 35 and 36**
Use to charge the battery pack, or power the GR-S55U using a car battery.



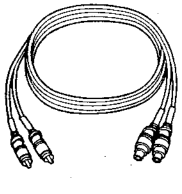
④ **AC power adapter/battery charger AA-V5U**
☞ **Pages 13, 35 and 36**
Use to power the GR-S55U with household AC current or charge the battery pack.



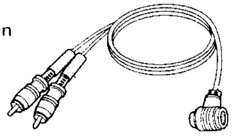
⑤ **Car battery cord AP-P1U**
☞ **Page 13**
For power supply from a car battery.



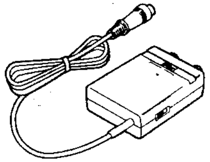
⑥ **A/V extension cable**
VC-P1U
Use to extend the A/V cable.



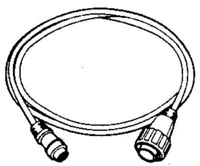
⑦ **A/V input cable**
VC-V012U
☞ **Page 32**
Use to connect the GR-S55U to a television set equipped with audio/video output connectors for recording, or to a second video recorder for dubbing.



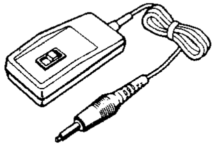
⑧ **RF unit RF-V3U**
☞ **Pages 29 and 30**
Use to connect the GR-S55U to a regular TV receiver for playback.



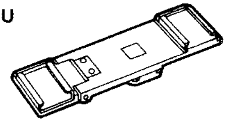
⑨ **Conversion cable**
VC-V810U
☞ **Page 33**
For connecting the GR-S55U to a VCR with a 10-pin camera connector.



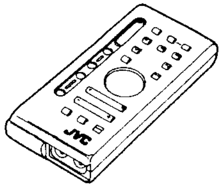
⑩ **Remote control unit**
RM-P1U
☞ **Page 40**
Controls recording start/stop from a distance.



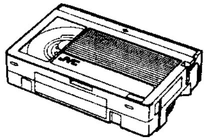
⑪ **Shoe adapter CU-V410U**
☞ **Page 39**
Use to attach microphone, character generator etc.



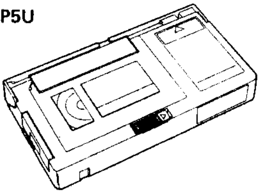
⑫ **Character generator**
CG-P50U/CG-V60U
☞ **Page 39**
Allows superimposition of titles, dates and lap time during recording.



⑬ **Compact video cassette**
ST-C20/TC-20
☞ **Page 5**
Allows 20 minutes of recording and playback in SP mode, and 60 minutes of recording and playback in EP mode.

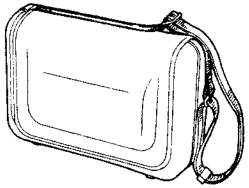


⑭ **Cassette adapter C-P5U**
☞ **Page 34**
Enables the ST-C20 compact video cassette to be used with regular S-VHS/ VHS machines.

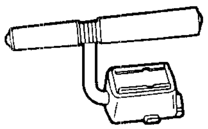


⑮ **Carrying case CB-V55U**
Use to carry the GR-S55U together with accessories.

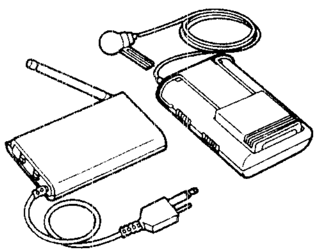
⑯ **Carrying bag CB-V40U**
Use to carry the GR-S55U together with basic accessories.



⑰ **Carrying handle**
VU-V130U
Use to carry GR-S55U.



⑱ **Wireless microphone unit WM-V1U**
Allows remote sound recording, for expanded movie-making flexibility.

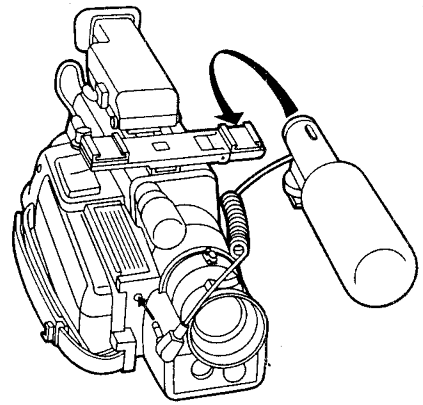


SHOE ADAPTER (optional)/ CARRYING HANDLE (optional)

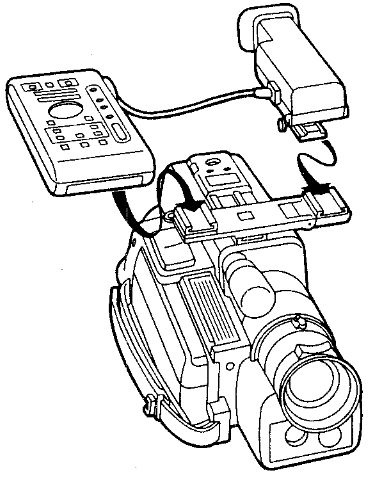
To attach external microphone or character generator.

CAUTION
- Do not attach a video light, its heat could cause malfunctioning of the GR-S55U.

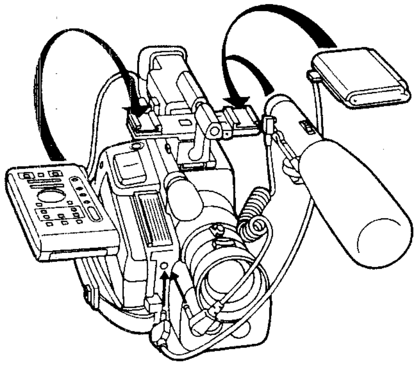
Attaching external microphone using shoe adapter.



Attaching character generator using shoe adapter.



Attaching character generator and external microphone using shoe adapter and carrying handle.

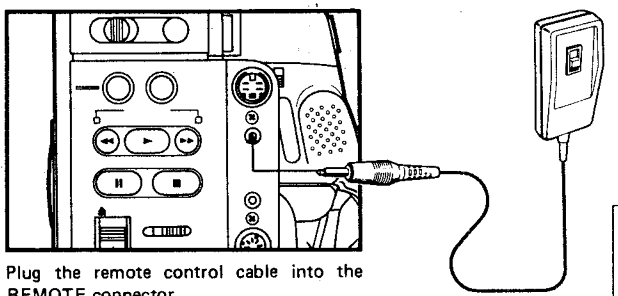


Notes:
- Do not adjust the viewfinder angle while using shoe adapter.
- Keep carrying handle in up position while attaching accessories.
- Run the microphone cord behind the shoe adapter.

REMOTE CONROL UNIT (optional)

The remote control unit RM-P1U (optional) permits recording start/stop to be controlled from a distance.

1



Plug the remote control cable into the REMOTE connector.

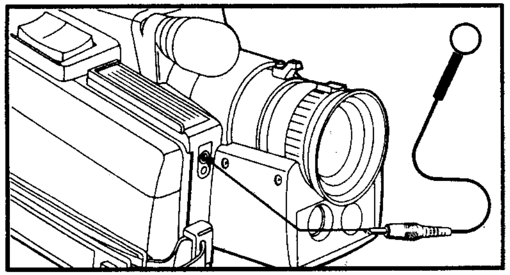
2 Press the standby button to engage the Recording Standby mode.

3 To start recording, set the remote control's switch to REC; to stop temporarily, set it to PAUSE.

Note:
Fader will not function when remote control unit is connected.

EXTERNAL MICROPHONE

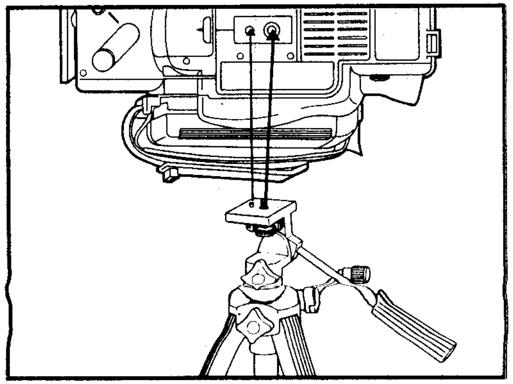
To use another microphone, do the following:



Plug the external microphone's cord into the microphone jack.

- When using the optional wireless microphone unit, plug the cable of receiver unit into the microphone jack.

TRIPOD MOUNTING



Align the screw and camera direction stud of the tripod with the camera's tripod mounting socket and stud hole, and firmly tighten the screw.

SUPPLEMENTAL INFORMATION

What is "color temperature"?
Light is composed of various color components in different proportions. A relationship exists between the temperature of a light source and the color components of the emitted light; as the temperature rises, the color of the light varies from red, orange, yellow, white to blue in that order. "Color temperature" is a value that expresses differences in color among light sources, measured in Kelvin degrees. Bluish light has a higher color temperature than reddish light.

What is "white balance"?
Making the colors look natural on TV is what white balance is all about. Because a camera is not as adaptable as the human eye, if a light source is reddish, white subjects in that light are recorded as reddish, White balance adjustment is performed to compensate for color temperature variations of light so that whites are reproduced as white. Correct white balance makes all other colors correct. The GR-S55U can perform automatic white balance adjustment in the full-auto mode. However, if illumination is insufficient, white balance adjustment cannot be performed. To obtain correct colors, therefore, sufficient illumination is essential.

What is "illuminance"?
"Illuminance" (also called 'luminance') is the intensity or brightness of light, expressed in lux or footcandles (fc). The GR-S55U is designed to provide best pictures under the conditions of a 700-lux (67 fc) illuminance, although shooting is possible all the away down to 10 lux (1 fc). To obtain good pictures in very bright light, the use of an ND (neutral density) filter is recommended. (See chart on next page.)

How to get good color pictures
The simplest way is to provide sufficient lighting (close to the camera's reference illuminance) and accurately adjust the camera to the color temperature of that lighting. If light sources of different color temperatures are used together, accurate white balance adjustment is very difficult. For example, if natural light is mixed with artificial light, which is likely to occur next to windows, correct colors of the subject are difficult to obtain. It is recommended in such cases that curtains in the room be closed to shut out light from outside. Also, when artificial lighting devices are used, they should all have the same color temperature. For example, it is recommended that incandescent or halogen lamps not be used together with fluorescent lighting.

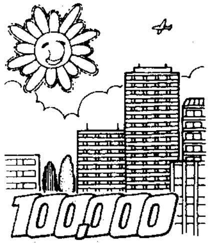
Color temperatures of various artificial lighting

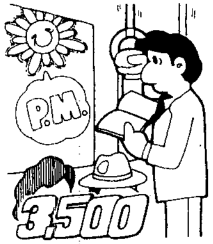
Type of illumination		Color temperature
Tungsten lamp for home use		2800 K
Tungsten lamp for photographic use		3200 K
Quartz-halogen lamp		
Blue lamp for photographic use		5000 K
Fluorescent lamp	Warm white	3500 K
	White	4500 K
	Daylight type	6500 K

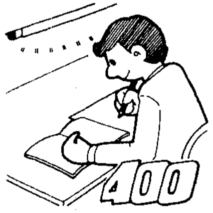
Illuminance chart

- The values on this chart are approximated to give you a rough reference.

	Unit: Lux (fc)	
ND filter desired	100,000 (9,300)	●Clear sky, mid-day, under sunlight (100,000/9,300) ●Clear sky (10:00 a.m.) under sunlight (65,000/6,045) ●Clear sky (3:00 p.m.) under sunlight (35,000/3,255) ●Cloudy sky (mid-day) under sunlight (32,000/2,976) ●Cloudy sky (10:00 a.m.) under sunlight (25,000/2,325)
Range for practical use	10,000 (930)	●By the window during the afternoon (3,500/324)
	2,000 (190)	●Cloudy sky (one hour after sunrise) (2,000/190)
	1,000 (94)	●Clear sky (one hour before sunset) (1,000/94)
	600 (55)	●Counters at department stores (500 – 700/47 – 66)
Lighting desired	500 (47)	●Bowling center (500/47) ●Office under fluorescent light (400 – 500/37 – 47) ●Library (400 – 500/37 – 47) ●Direct light of a flashlight at 1m 1m (3 ft) distance (250/22.7)
	100 (9)	●Streetlights at night (150 – 200/13.5 – 18)
	80 (7.3)	
	Minimum lighting for an object	
	15 (1.4)	●Cigarette lighter (at a distance of 30cm/11.8 in) (15/1.4)
	10 (1)	●Candlelight (at a distance of 20cm/7.9 in) (10 – 15/1 – 1.4)







IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first ....

Symptoms	Check points
Power	
No power is supplied	●Is the battery pack correctly installed? ●Is the battery pack charged? ●Is the power supply unit correctly connected? ●Is the POWER switch of the connected AC adapter set to ON?
Recording	
Recording is impossible.	●Check to see if the cassette safety tab is in place. See page 5.
Picture colors greatly differ from actual subject colors.	●If in the manual white balance mode, check the setting of the ☼/▭/☼ button.
No sound is recorded with an external microphone.	●Is the microphone's switch set to ON?
Recording does not start.	●Have you pressed the standby button first?
Playback	
Tape is running, but no playback picture appears.	●Is the TV/VIDEO switch of the RF unit set to VIDEO? ●Is the TV receiver set to channel 3 or 4? ●If A/V connection is used, is the TV's VIDEO/TV switch set to VIDEO?
Noise bars appear in the playback picture.	●Use the TRACKING control to reduce noise bars.
Playback picture is blurred or interrupted while TV programs received are clear.	●Video heads may be dirty or worn out. For head cleaning or replacement, consult the nearest JVC Service Dealer.
Tape transport	
Tape stops during fast forward or rewind.	●Is the "M" indication visible in the tape counter? If so, press the MEMORY button to cancel the memory function.
Rewinding or fast forwarding is impossible.	●Check to see if the tape has already been fully wound on one reel or the other.
Other	
No function is available with more than two mode indicators lit.	●If this should happen when using power supply units other than the battery pack, turn their POWER switch on and off. With a battery pack, replace it with another charged one.

The GR-S55U is a microcomputer-controlled device. External noise and interference might prevent it from functioning properly. In such cases, first disconnect its power supply unit (battery pack, AC power adapter, etc.); and then reconnect it and proceed as usual from the beginning.

SECTION 1
GENERAL DISASSEMBLY

1.1 DISASSEMBLY

1.1.1 Electronic viewfinder (E. VF)

1. Disconnect the 8-pin connector as shown in Fig. 1-1-1. Slightly pressing the slide knob in the direction of Ⓐ, move the electronic viewfinder in the direction of Ⓑ to remove it.

1.1.2 E. VF shoe and upper case

1. See Fig. 1-1-2(A).
   Remove screws Ⓐ securing the VF shoe cover first, and then, raise the VF shoe spring's pawls portion upward with a screwdriver (–) and move it in the direction of the arrow Ⓒ to remove the VF shoe spring.
2. Remove screws Ⓓ shown in Fig. 1-1-2(A) to remove the VF shoe.
3. Remove a screw Ⓔ and Ⓕ shown in Fig. 1-1-2(A) and screws Ⓖ, Ⓗ, Ⓘ and Ⓙ shown in Fig. 1-1-2(B) to remove the upper case.
   Then, disengage the connectors which connect the LCD module and the main board with flexible wires as shown in Fig. 1-1-2(C).

Notes:
- The screw Ⓘ shown in Fig. 1-1-2(B) is the longest one securing the optical bracket of the camera section.
- When disassembling and re-assembling this section, pay the most careful attention to the flexible wires as they are formed in soft films.

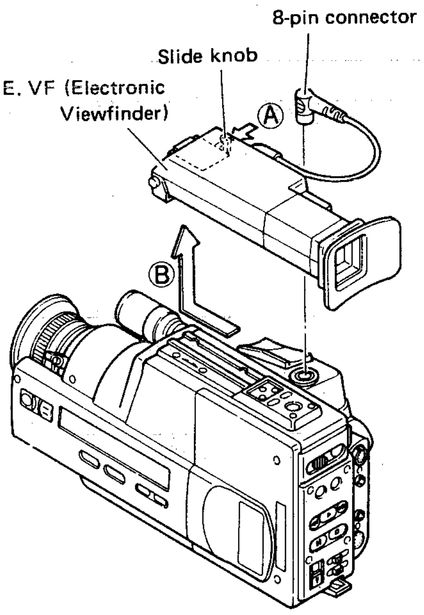

8-pin connector
Slide knob
E. VF (Electronic Viewfinder)
Ⓐ
Ⓑ

Fig. 1-1-1

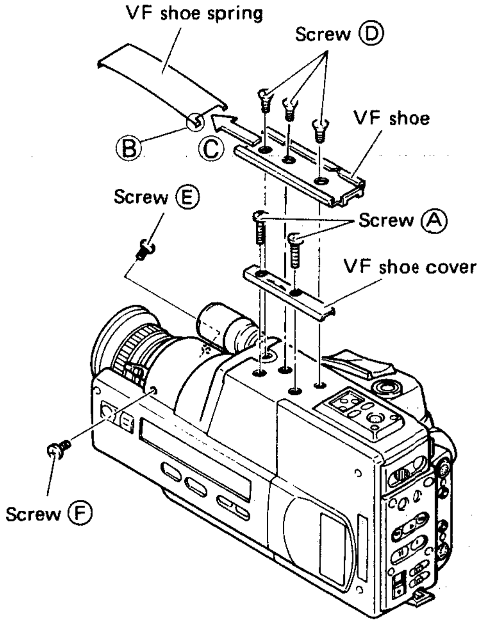

VF shoe spring
Screw Ⓓ
VF shoe
Ⓑ
Ⓒ
Screw Ⓔ
Screw Ⓐ
VF shoe cover
Screw Ⓕ

Fig. 1-1-2(A)

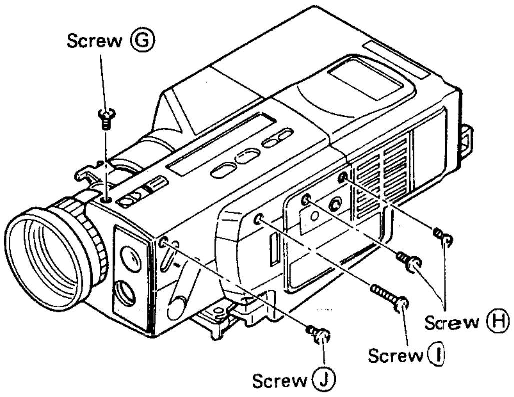

Screw Ⓖ
Screw Ⓗ
Screw Ⓘ
Screw Ⓙ

Fig. 1-1-2(B)

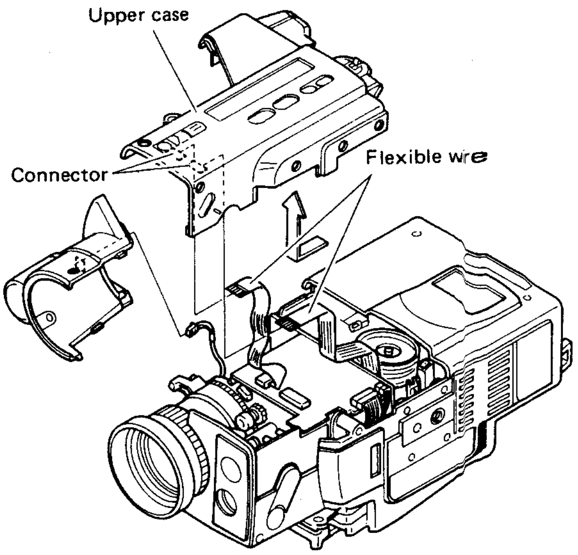

Upper case
Connector
Flexible wre

Fig. 1-1-2(C)

1.1.3 Camera section

1. See Fig. 1-1-3.
   Remove screws Ⓐ and Ⓑ securing the front panel to remove it.
   Next, remove screws Ⓒ and Ⓓ securing the lower case and a screw Ⓔ securing the camera section. Then, the lower case and the lens can be disassembled, and at this stage, make sure to remove the flexible wire Ⓕ and connectors Ⓖ and Ⓗ.

Note: At the above procedure, pay attention to the flexible wires and other wires connecting the lower case and the camera section.

1.1.4 Cassette cover and deck section (Fig. 1-1-4)

1. Remove two screws Ⓐ securing the cassette cover. Then, lift the cassette cover in the direction Ⓑ to remove it.
2. Remove four screws Ⓒ securing the operation unit. At removing the operation unit, pay attention to the connectors connecting it with the deck section.
3. As indicated in Fig. 1-1-4, take out 3 screws Ⓓ, screw Ⓔ and 2 screws Ⓕ. Disconnect connectors Ⓖ, Ⓗ and Ⓘ. Remove the shoe bracket in the direction shown by arrow Ⓙ. The shoe bracket can be more easily removed by spreading the lower case in the direction shown by arrow Ⓚ.

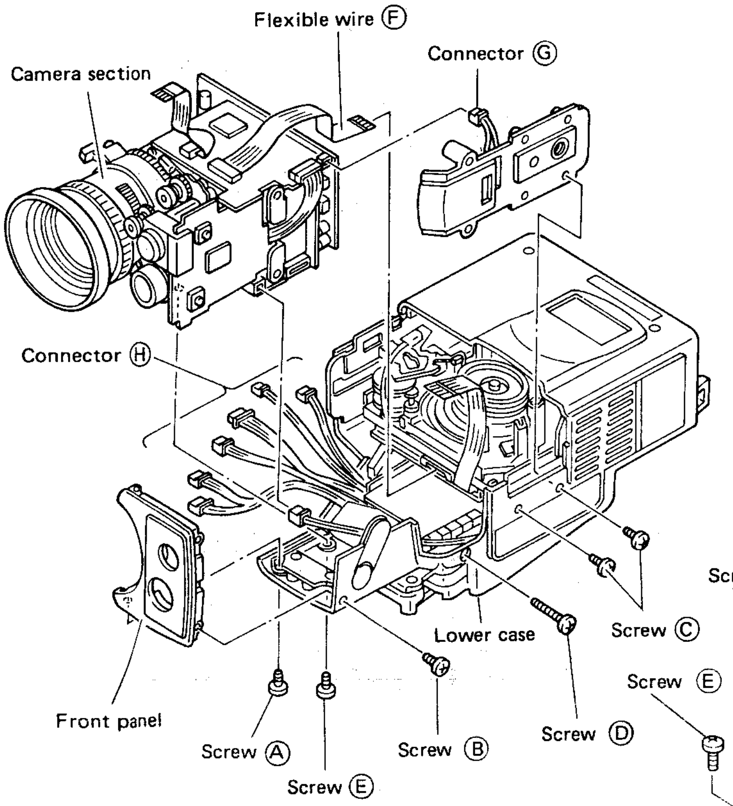

Flexible wire Ⓕ
Connector Ⓖ
Camera section
Connector Ⓗ
Lower case
Screw Ⓒ
Front panel
Screw Ⓐ
Screw Ⓔ
Screw Ⓑ
Screw Ⓓ

Fig. 1-1-3

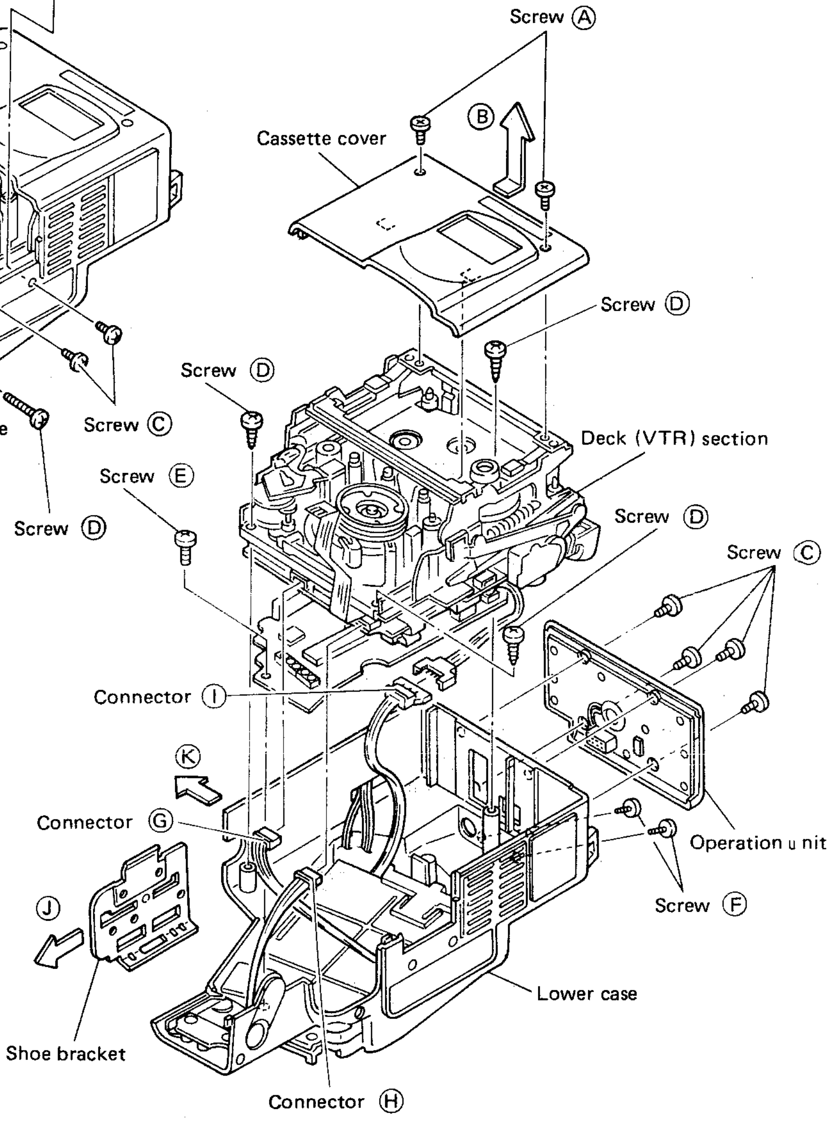

Screw Ⓐ
Ⓑ
Cassette cover
Screw Ⓓ
Screw Ⓓ
Deck (VTR) section
Screw Ⓔ
Screw Ⓓ
Screw Ⓒ
Connector Ⓘ
Ⓚ
Connector Ⓖ
Operation unit
Ⓙ
Screw Ⓕ
Lower case
Shoe bracket
Connector Ⓗ

Fig. 1-1-4

1.2 REMOVAL OF CIRCUIT BOARDS

1.2.1 Deck section

1. Remove the MIC AMP board after removing two screws Ⓐ and then disconnect connector Ⓒ Next, remove the MIC JACK board by removing screw Ⓑ . Shown in Fig. 1-2-1(A).
2. The TRIGGER board can be removed by removing the board bracket.
3. As indicated in Fig. 1-2-1(B), raise the cassette housing with one hand and shift the Y/C board downward with the other hand. The Y/C board together with connectors Ⓤ , Ⓥ and Ⓦ can be removed from the main board.
4. Remove screws Ⓗ and Ⓘ shown in Fig. 1-2-1(B). Disconnect connectors Ⓙ, Ⓚ, Ⓛ, Ⓜ and Ⓝ and the flexible wire Ⓞ , and then remove the MAIN board with careful attention to connectors connecting the MAIN board and the deck section.
5. Remove the SENSOR board by removing four screws Ⓣ shown in Fig. 1-2-1(B).
6. Remove two screws Ⓟ to remove the MDA board, and carefully disconnect connectors Ⓠ, Ⓡ and Ⓢ between the MAIN and DRUM boards.

Note: When performing above the procedures, pay enough attention to flexible wires and every wiring of the deck section not to damage them.

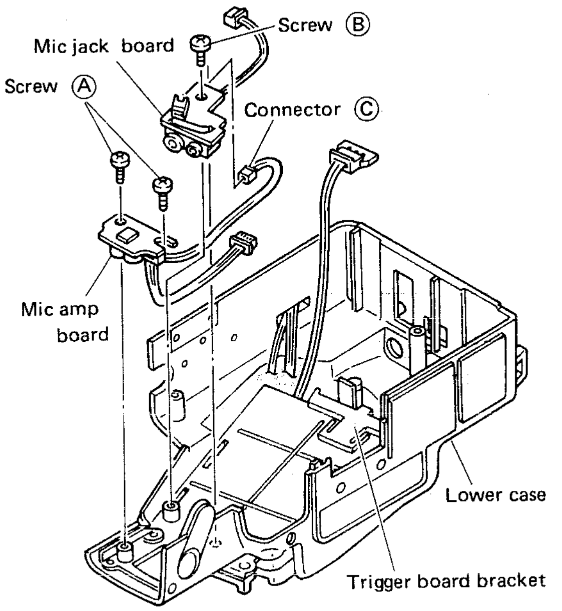

Screw Ⓑ
Mic jack board
Screw Ⓐ
Connector Ⓒ
Mic amp board
Lower case
Trigger board bracket

Fig. 1-2-1(A)

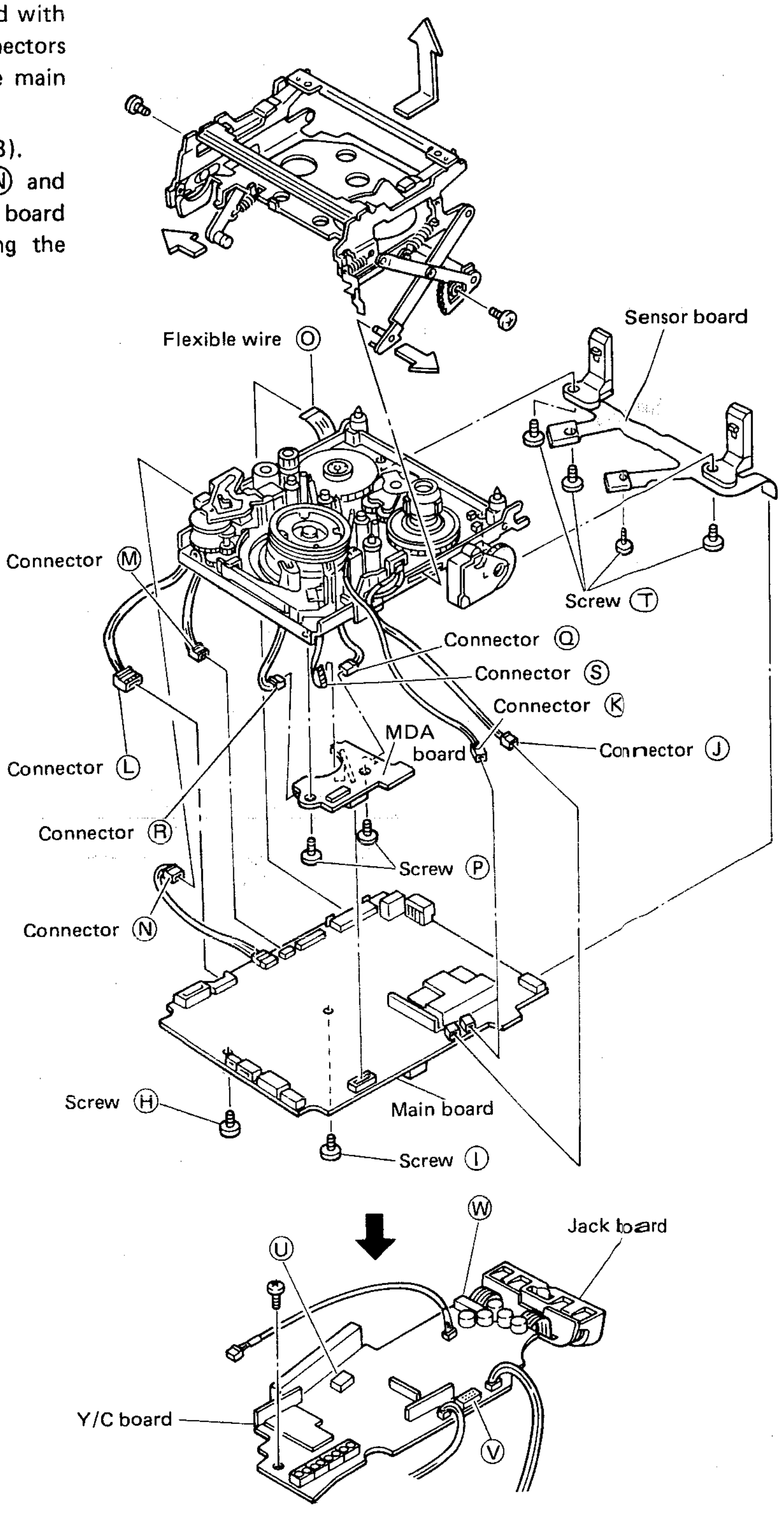

Flexible wire Ⓞ
Sensor board
Connector Ⓜ
Screw Ⓣ
Connector Ⓠ
Connector Ⓢ
Connector Ⓚ
MDA board
Connector Ⓙ
Connector Ⓛ
Connector Ⓡ
Screw Ⓟ
Connector Ⓝ
Screw Ⓗ
Main board
Screw Ⓘ
Ⓦ
Jack board
Ⓤ
Y/C board
Ⓥ

Fig. 1-2-1(B)

1.2.2 Camera section

1. See Fig. 1-2-2.
   Remove two screws Ⓐ securing the VIDEO-1 board first, and remove two screws Ⓑ securing the FAW board. At this time, pay careful attention to the two washers Ⓒ tightened together with not to mis or drop them.
   As all boards except the VIDEO-1 board are wired with connectors each other, connectors between the camera section and the IND board/ENC board can be disengaged by drawing out the boards sidewards.
2. Carefully draw out the connector Ⓓ of the IND board since it is directly connected with the VIDEO boards. Next, disconnect the connector Ⓔ to remove the IND board.
3. After removing the insulator Ⓕ, disconnect connectors Ⓖ and Ⓗ connected directly with the VIDEO-1 board as shown in Fig. 1-2-2.
   The ENC board can be removed by disconnecting connectors Ⓘ and Ⓙ.
4. To remove the VIDEO-2 board, remove two screws securing the DC-DC converter (refer to the "Optical Block Assembly") and the converter from the camera section first since the VIDEO-2 board is directly connected to the VIDEO-1 board with the connectors.

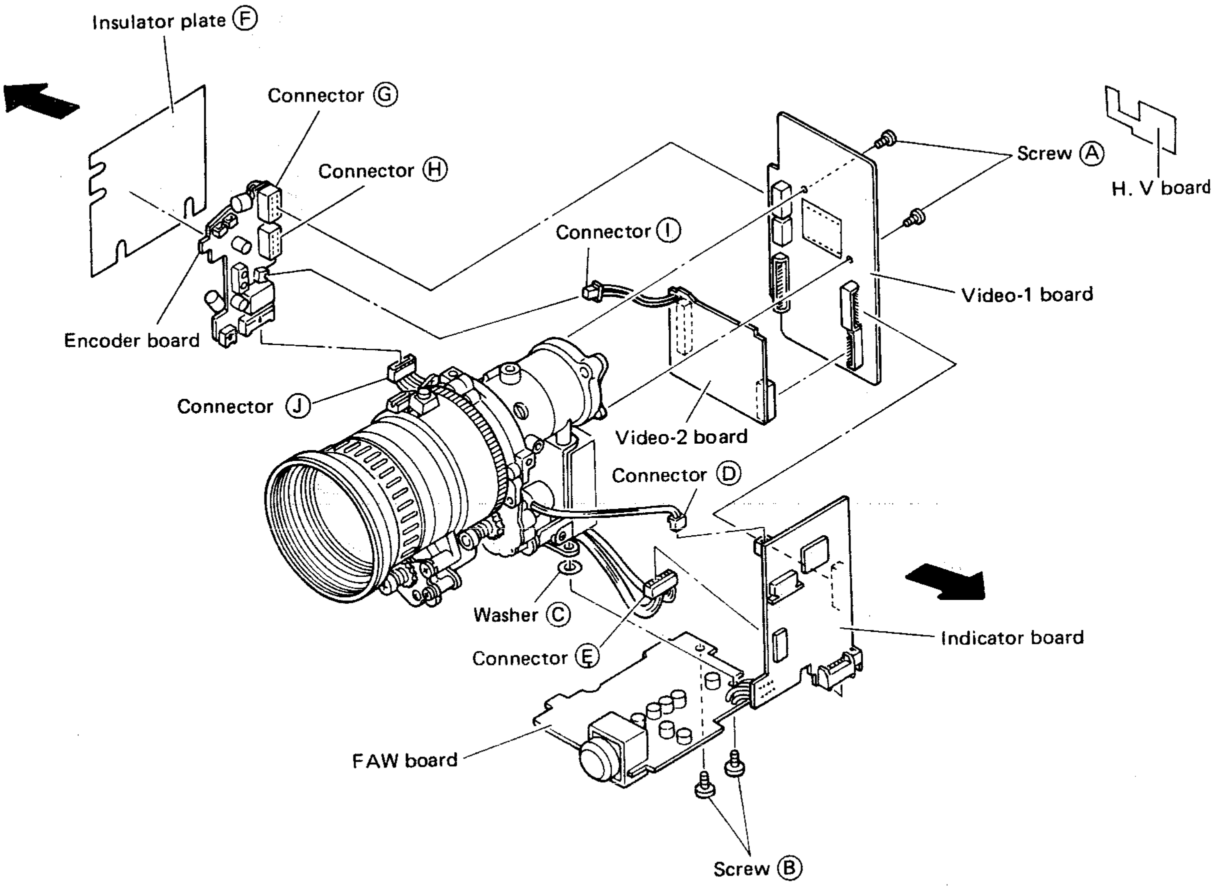

Insulator plate Ⓕ
Connector Ⓖ
Connector Ⓗ
Connector Ⓘ
Screw Ⓐ
H. V board
Video-1 board
Encoder board
Connector Ⓙ
Video-2 board
Connector Ⓓ
Indicator board
Washer Ⓒ
Connector Ⓔ
FAW board
Screw Ⓑ

Fig. 1-2-2

1.3 REPLACEMENT OF IMAGE SENSOR

1.3.1 Precautions

1. When replacing the CCD image sensor, make sure to grounding it by soldering and so on since its characteristic against electrostatic breakdown is weaker than C-MOS LSIs.
2. Pay enough attention to the transparent glass and optical filter of the CCD image sensor so that it won't be dusty, soiled or damaged. If it is soiled with fingerprints, etc., clean gently with silicon lens tissue, chamois, etc.
3. An orange protector seal was applied to the transparent glass of CCD image sensors before shipment. When replacing, do not remove it just before assembling it to the optical block.
4. When soldering the CCD image sensor to the board, do it as fast as possible. If it takes a considerable long time, it causes discoloration of the optical filter by excessive heat.

1.3.2 Removal of CCD image sensor

1. Remove two screws Ⓑ fixing the VIDEO-1 board and the CCD image sensor and unsolder the latter first, and then draw out the CCD image sensor in the direction of the arrow mark to separate it from the VIDEO-1 board.
2. Remove three screws securing the filter holder Ⓒ, and remove the optical LPF Ⓓ and the rubber Ⓔ for the removal.

1.3.3 Installation of CCD image sensor

1. Remove the protector seal of a CCD image sensor Ⓖ and set it on the imager holder Ⓕ first, and then, assemble the space rubber Ⓔ, optical filter Ⓓ, and the filter holder Ⓗ in the above order as piling up them. At this stage, make sure not to missetting the CCD image sensor and imager holder in wrong direction. The optical filter Ⓓ should be placed with its white marking facing downwards and to the lens section.
   After that, fix the filter holder to the imager holder Ⓕ with three screws Ⓒ.
2. Paying attention to the direction, fix the imager holder Ⓕ to the optical block with two screws Ⓕ.
3. Carefully insert the CCD image sensor's pins which protrude from the imager holder Ⓕ into the jacks of the VIDEO-1 board, and then secure the board with two screws Ⓑ.
4. Solder the pins of the CCD image sensor to the VIDEO-1 board. At this time, use care to avoid overheating.
5. Set the lens to MACRO. Confirm absence of vignetting at the image corners. If absent, the picture angle and centering are acceptable.

1.3.4 Adjustment

1. For correcting picture's center and diagonal image, loosen two screws Ⓑ of the VIDEO-1 board and move the whole of the board back and forth.
2. Perform back focus adjustment.
3. Electrical adjustment is not necessary.

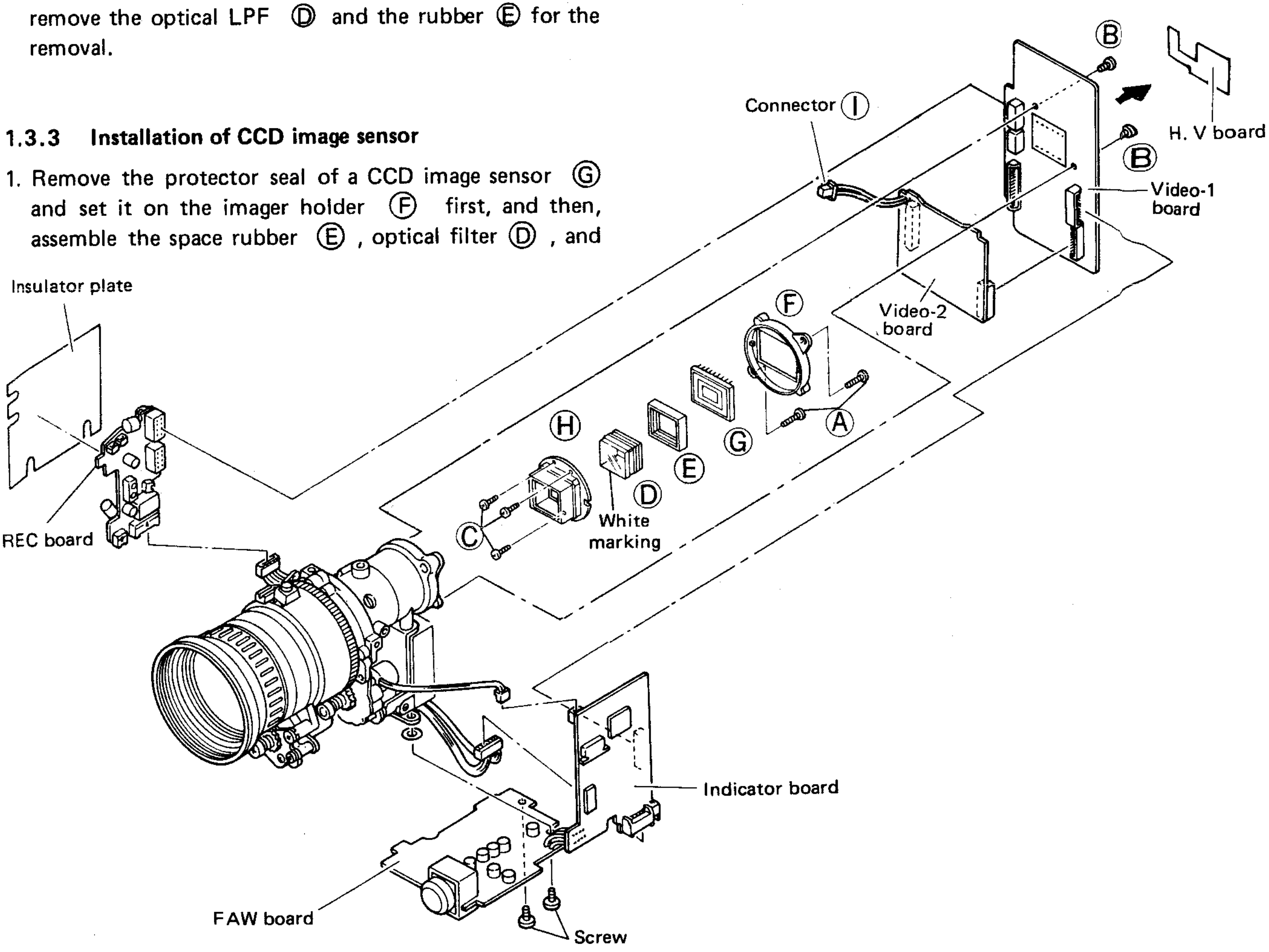
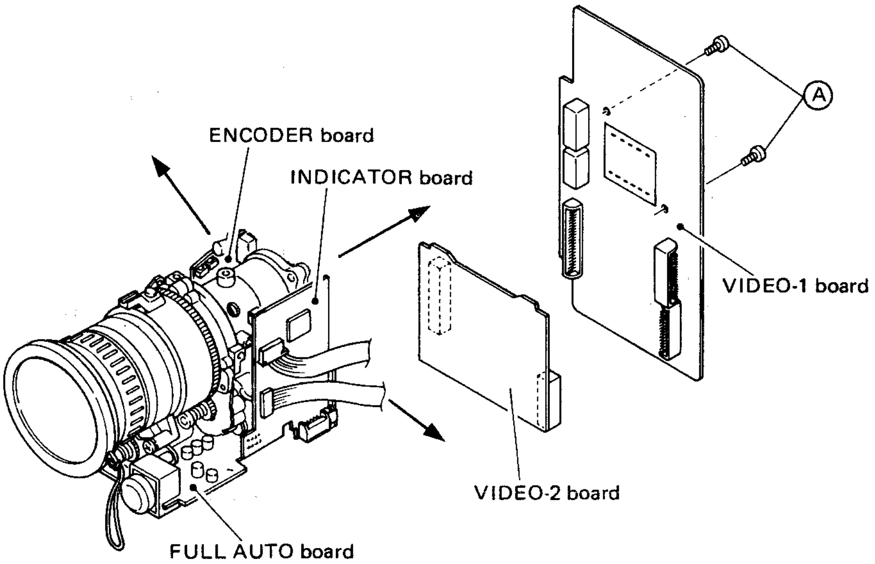


Fig. 1-3-1

1.3.5 Replacement of AF unit

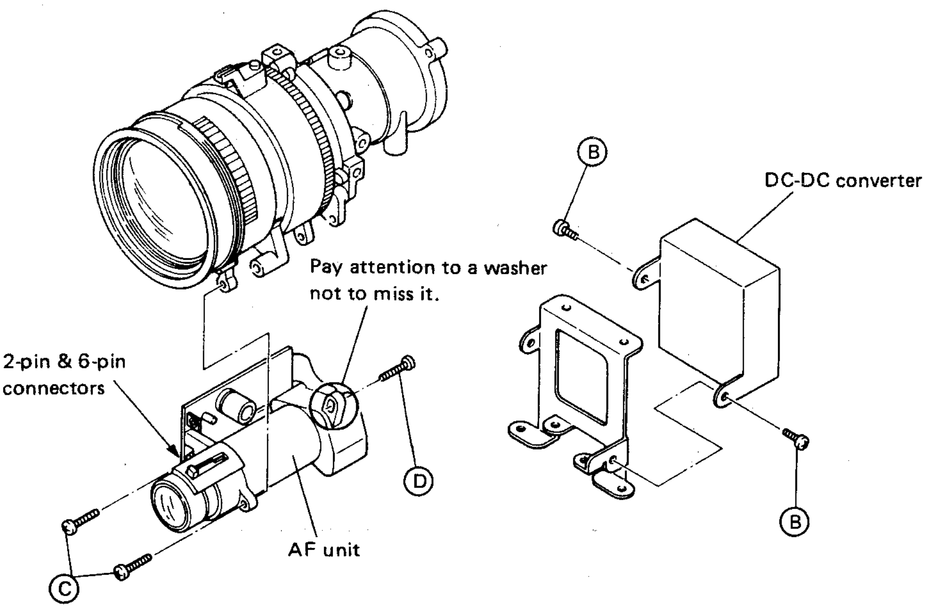
- **Removal procedure**

1. Separate the camera section from the deck section, and remove the two screws Ⓐ.
2. Unsolder IC1 (CCD) on the VIDEO-1 board.
3. Draw out the INDICATOR board and ENCODER board which are directly connected to the VIDEO-1 board in the direction of arrow marks respectively.
4. The camera and deck sections can be separated by drawing out the VIDEO-1 board from the CCD in the direction of the arrow shown in Fig. 1-3-2.
5. The DC-DC converter can be removed by removing the two screws Ⓑ securing the converter (see Fig. 1-3-3).
6. Remove the two screws Ⓒ and one screw Ⓓ securing the AF (auto focus) unit to remove it from the camera section.
   Note: At removal of the screw Ⓓ, make sure not to miss a washer between the AF unit and the camera section.
7. Disconnect the 2-pin and 6-pin connectors of the AF unit to separate it from the camera section.
8. When fitting the camera section with a new AF unit, first set the interlocking pin of the AF unit into the grooved rail on the focus ring and then tighten the two screws Ⓒ in front of the AF unit (see Fig. 1-3-3).



ENCODER board
INDICATOR board
Ⓐ
VIDEO-1 board
VIDEO-2 board
FULL AUTO board

Fig. 1-3-2



Ⓑ
DC-DC converter
Pay attention to a washer not to miss it.
2-pin & 6-pin connectors
Ⓓ
AF unit
Ⓒ
Ⓑ

Fig. 1-3-3

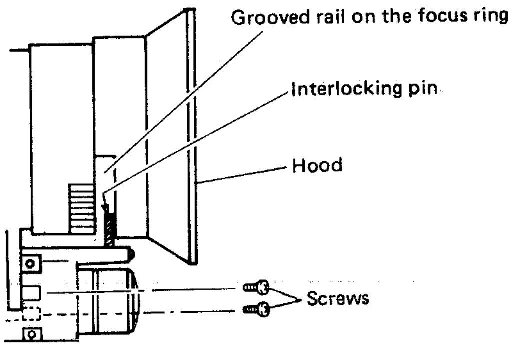
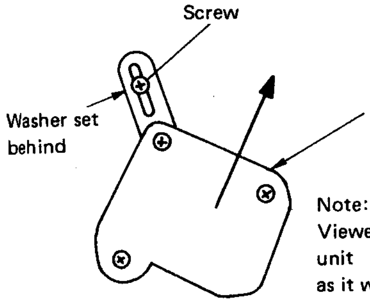

Grooved rail on the focus ring
Interlocking pin
Hood
Screws

Fig. 1-3-4

9. Secure the AF unit with a screw Ⓓ (Fig. 1-3-3) from the back. At this time, make sure to set a washer between the optical block and the AF unit, and Ⓓ, holding the AF unit in the direction of the arrow mark tighten the screw locating it around the center of the AF unit's slider plate.
10. After replacement, perform adjustments to be described below.


Screw
Washer set behind

Note:
Viewed from the back of the AF unit (from VIDEO-1 board side as it was removed)

Fig. 1-3-5

- **Adjustments**

Precautions

- After replacement of the AF unit, the following adjustment must be performed.
- Put away everything except the subject (especially clear around the optical section) since it is very delicate to adjust positioning of the AF unit.
- Before commencing the adjustment, confirm that back focus of the image pickup system has been correctly adjusted.

1. Set up a subject approx. 2 m distant from the lens.
2. Since the master lens for auto focus is located just under the image pickup lens, place the unit upside down so that the FULL AUTO board is positioned up.
3. Connect the CN6 of [0][2] Y/C board with the viewfinder and observe picture on the viewfinder screen.
4. Connect the CN410 of [2][4] INDICATOR board with the viewfinder, and confirm that indication patterns can be seen in the viewfinder.
5. Set the FOCUS switch to "AUTO" position, and turn the focus ring from 1.1 m to 5 m and vice versa repeatedly to check that picture is automatically in focus.

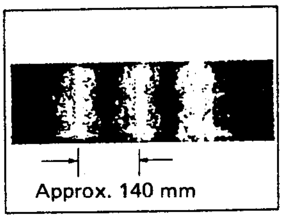
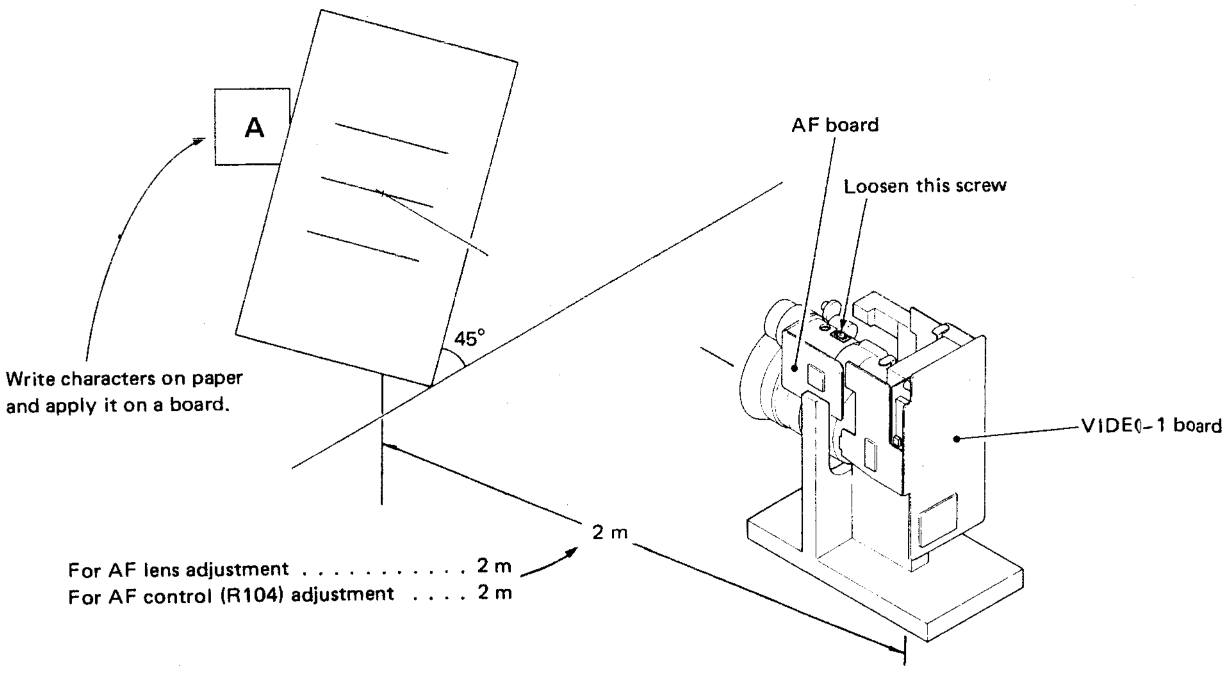

Approx. 140 mm

Fig. 1-3-7 AF adjustment chart


A
45°
Write characters on paper and apply it on a board.
2 m
AF board
Loosen this screw
VIDEO-1 board

For AF lens adjustment . . . . 2 m
For AF control (R104) adjustment . . . . 2 m

Fig. 1-3-6 Setup for AF adjustment

6. Set the FOCUS switch to "MANUAL" position and attach the ND filter(s) which is used for back focus adjustment of the image pickup system to the lens.
7. In the above condition, confirm that the focus indication patterns ('focus in front', 'in focus', 'focus behind') are displayed in the viewfinder.

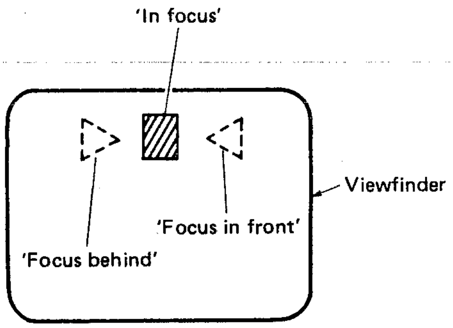

'In focus'
Viewfinder
'Focus in front'
'Focus behind'

Fig. 1-3-8

8. Observing the AF indication pattern in the viewfinder, adjust the master lens of the AF lens with an eccentric handle so that the lens brings the subject into focus — the indication pattern to show 'in focus' is located in the center of the viewfinder display.

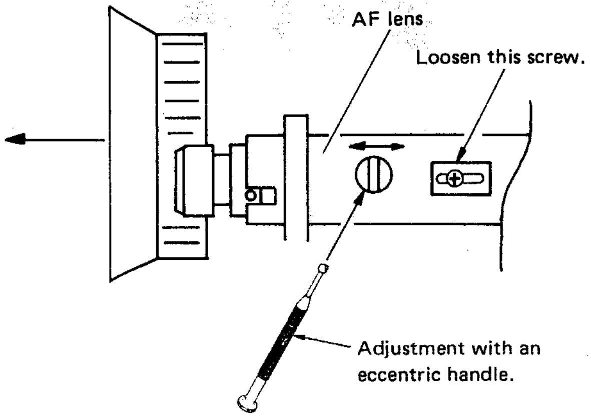

AF lens
Loosen this screw.
Adjustment with an eccentric handle.

Fig. 1-3-9

9. If the adjustment with an eccentric handle cannot be achieved, adjust VR104 so that the 'in focus' pattern is positioned in the center of the display.

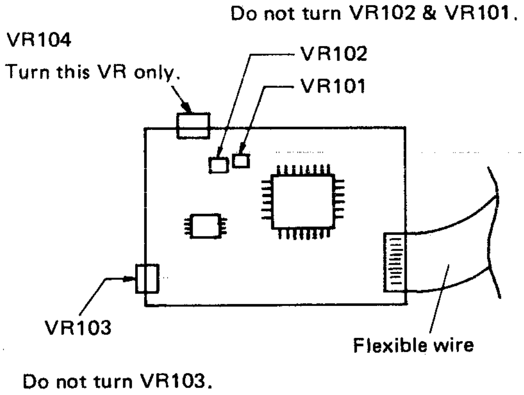

Do not turn VR102 & VR101.
VR104
Turn this VR only.
VR102
VR101
VR103
Flexible wire
Do not turn VR103.

Fig. 1-3-10

10. After the above adjustment is completed, set the FOCUS switch to "AUTO" and confirm that picture is in focus.

1.4 LOCATION OF MAIN BOARDS

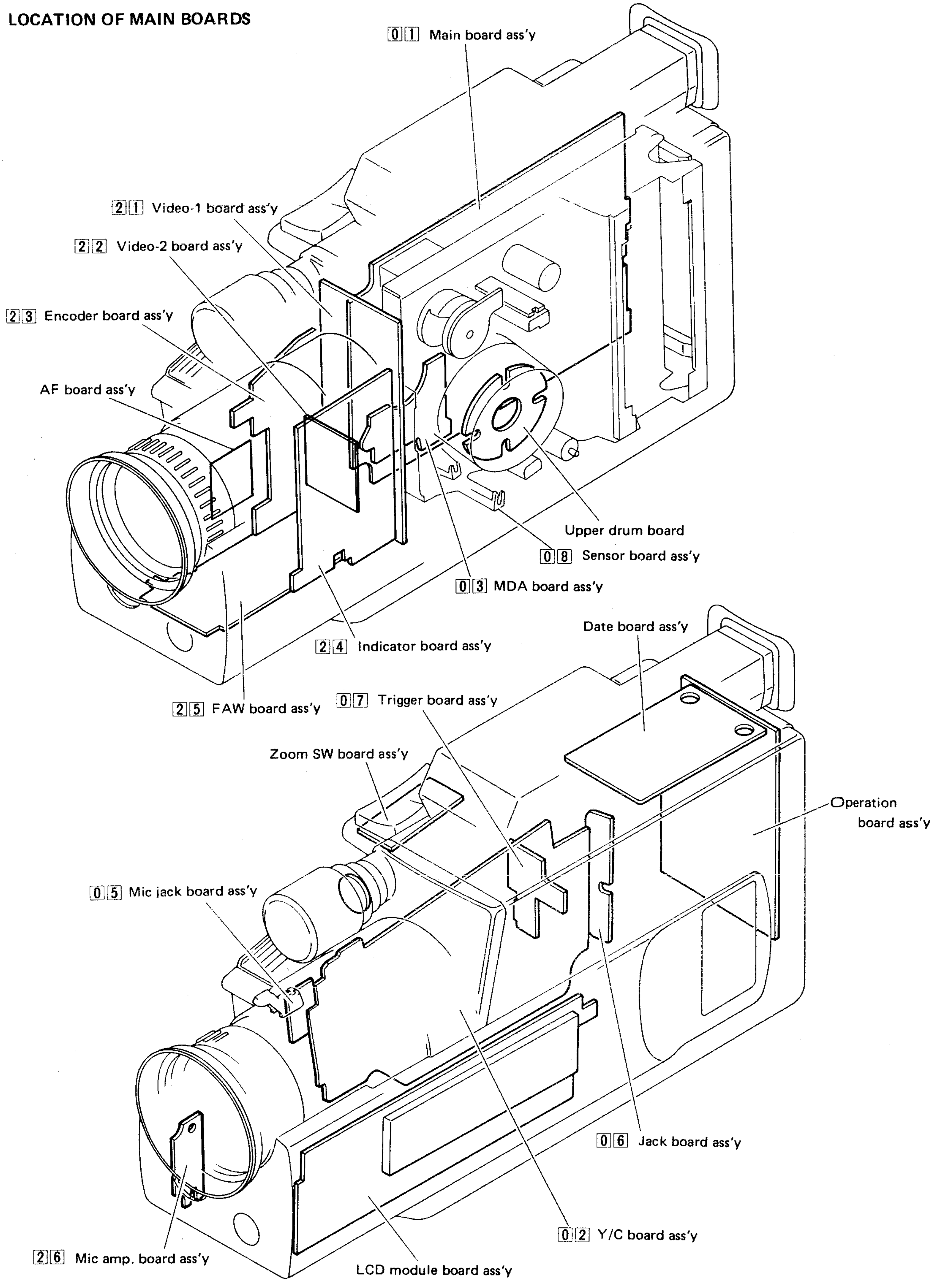

01 Main board ass'y
21 Video-1 board ass'y
22 Video-2 board ass'y
23 Encoder board ass'y
AF board ass'y
Upper drum board
08 Sensor board ass'y
03 MDA board ass'y
24 Indicator board ass'y
25 FAW board ass'y
07 Trigger board ass'y
Date board ass'y
Zoom SW board ass'y
Operation board ass'y
05 Mic jack board ass'y
06 Jack board ass'y
02 Y/C board ass'y
26 Mic amp. board ass'y
LCD module board ass'y

Fig. 1-4-1

SECTION 2
MECHANICAL ADJUSTMENT

2.1 BEFORE PROCEEDING

1. This section describes procedures to replace mechanism parts which have aged and been worn as well as for parts replacement resulting from accidental troubles.
2. As most mechanical adjustments have close relation to electrical adjustments, pay enough attention to adjusting the mechanism in consideration of that it is the base of electrical adjustments.
3. If it needs to operate the mechanism without a cassette loaded, apply black tape to the end sensor of the deck section to shut off light and turn on the cassette switch. In this condition, keep the reel disk rotating not to enter the mechanism into unloading mode.

2.2 REQUIRED JIGS AND TEST EQUIPMENT

1. To perform mechanical adjustment properly and easily, the following tools and equipment are required for the exclusive use.
2. Besides the tools and equipment for the exclusive use, the following measuring devices and general-purpose tools, etc. are necessary.

- Color TV monitor
- Hex. wrenches
- Oscilloscope (wide band)
- Precision screwdrivers
- Cassette tape (for tape running test and recording)

Note: Tools and equipment for electrical adjustments, refer to the section 3.1.3.

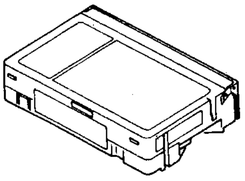
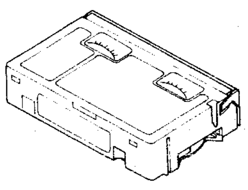
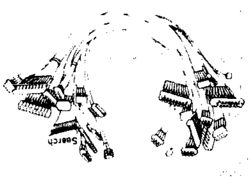
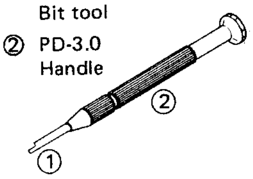
Alignment tape (for SP) MH-C1

Cassette torque meter PUJ50431-2

Patching cord YTU93001B

A/CTL head position tool ass'y YTU93002A
① YTU93002-01 Bit tool ② PD-3.0 Handle 

Table 2-2-1 Tools and equipment for mechanism adjustment

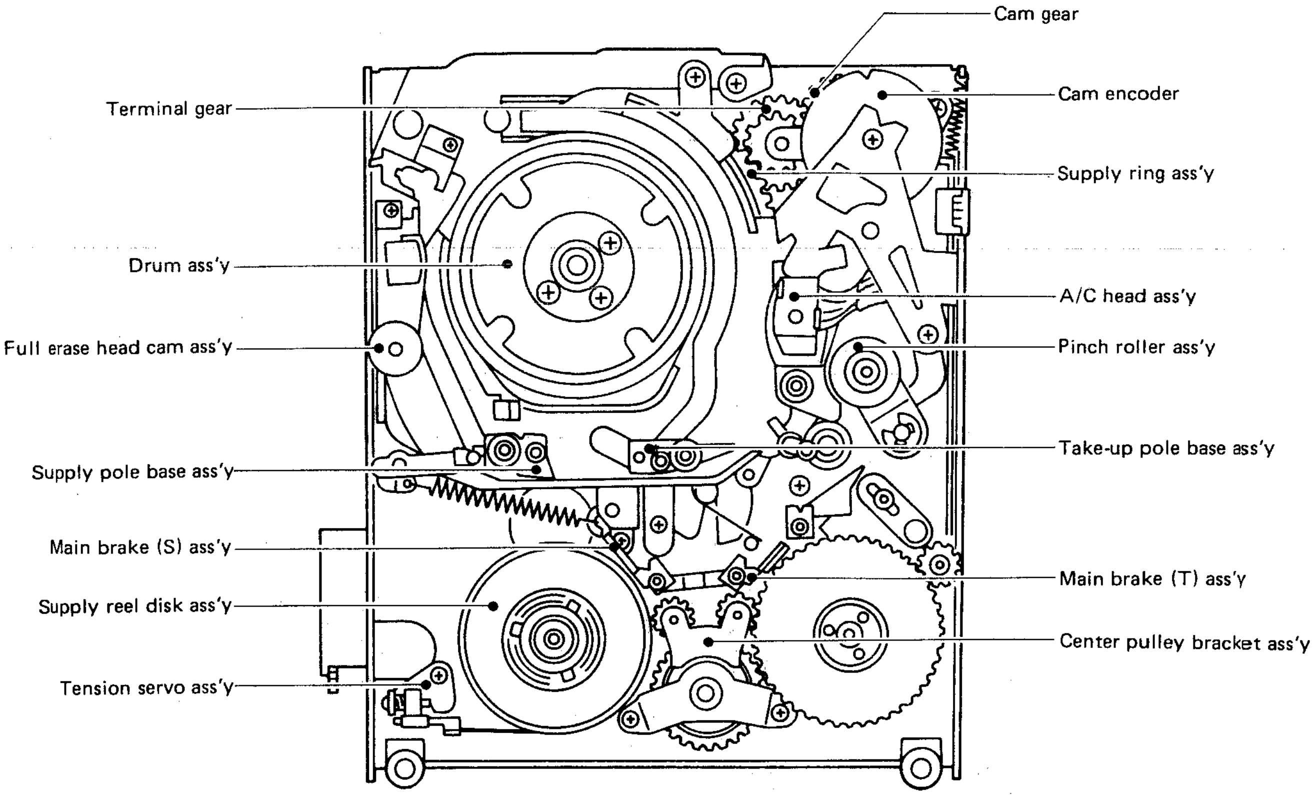
■ **GR-S55U Mode shift**

SW OPERATION / MODE IN PROGRESS			POWER	STOP	REW	FF	REC	PLAY	PAUSE	C.TRIGGER	REMOCON	EJECT	QUICK REV / EDIT	CAM/EXT	SP / EP	REHARSAL	COUNTER MEMORY	TRIGGER ALARM ON				
	POWER OFF		○																			
	EMERGENCY		○																			
	DEW.S ON		○	○	○	○						○		○	○	○						
	CASSETTE SW OPEN		○																			
	REC SAFE SW OPEN		○	○	○	○		○	○			○	EDIT ○	○	○	○						
	STOP		○	X	○	○	○	○				○		○	○	○						
	REHEARSAL		○	○	○	○	○	○		Remote ○		○	EDIT ○	○	○	X						
	PLAY		○	○	Search ◕	Search ◕	○	X	○ Pause						AUTO							
	LOAD		○	○	Ind. ◕	Ind. ◕	○	X	○ Pause													
	UNLOAD		○	X	○	○	○	○				○		○	○							
	UNLOAD		○	○	End ○	Start ○	○	○				○		○	○							
	STILL		○	○	Search ◕	Search ◕	○	○	○				Preroll ○									
	EDIT		○	○					○						AUTO		○					
SEARCH	FF		○	○	○	Search ◕									AUTP							
	REW		○	○	Search ◕										AUTO							
REC	without REMO-CON	CAM	○	○						○	X			○	○			○				
		EXT	○	○					○					○	○							
	without REMO-CON	CAM	○	○							○			○	○							
		EXT	○	○							○			○	○							
	LOAD		○	○				EXT ○		CAM ○	Remocon ○			○	○							
	UNLOAD		○	X	○	○	○	○				○		○	○							
REC I PAUSE	without REMO-CON	CAM	○	○						○	X		○	○	○			○				
		EXT											○	○	○							
	without REMO-CON	CAM											○	○	○							
		EXT											○	○	○							
	BACK SPACE																					
	QUICK REV																					
	FF		○	○	○	X	○	○									○					
	REW		○	○	X	○	○	○									○					5

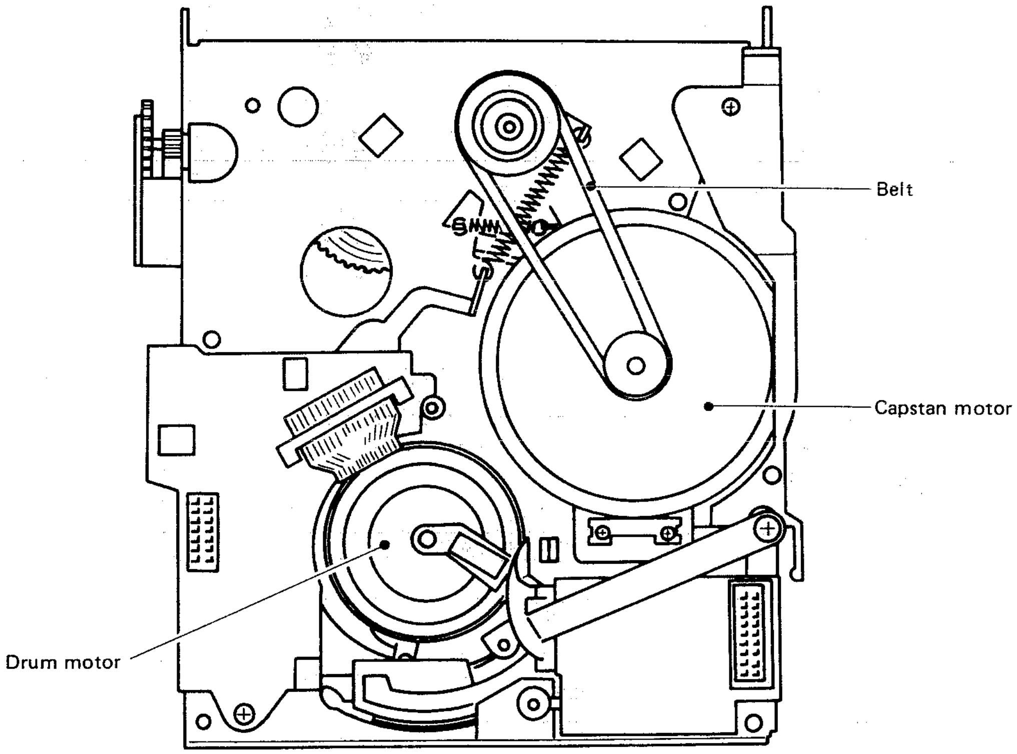
○ : Mode shift operative X : No change in mode : No change in mode

◕ : Effective during SW pressed

2.3 LOCATION OF MAIN PARTS


Cam gear
Terminal gear
Cam encoder
Supply ring ass'y
Drum ass'y
A/C head ass'y
Full erase head cam ass'y
Pinch roller ass'y
Take-up pole base ass'y
Supply pole base ass'y
Main brake (S) ass'y
Main brake (T) ass'y
Supply reel disk ass'y
Center pulley bracket ass'y
Tension servo ass'y

Top view of deck


Belt
Capstan motor
Drum motor

Bottom view of deck

2.4 REPLACEMENT OF UPPER DRUM

1. Unsolder all soldered points (16 points) on the upper drum board, and remove two screws (see Fig. 2-4-1).
2. Remove the upper drum board together with the upper drum.
   If it is difficult to remove the upper drum, set the tool provided with a new upper drum as shown in Fig. 2-4-2 to do it easily.
   Before installing new one, insert a soldering iron (50 W) into the hole of the upper drum and heat it for 3–5 minutes to expand the hole. At this time, pay careful attention to the drum's temperature not to exceed 85°C.
   As the upper drum of this model is made more precisely than that of any conventional model, there is little gap between the drum's hole and the shaft. So, it is recommended to heat the drum nearly to 50°C. If the screws of the tool provided with a new upper drum is not long enough to remove the upper drum to be replaced, exchange the screws for longer ones.
3. With careful attention not to touch a new upper drum's head or damage the drum, replace the upper drum.
4. When installing a new upper drum, set its position for the tapped holes for the two screws Ⓐ and fix it by tightening the screws.
5. After completion of the replacement, check up and adjust FM waveforms (refer to section 2.6.1).

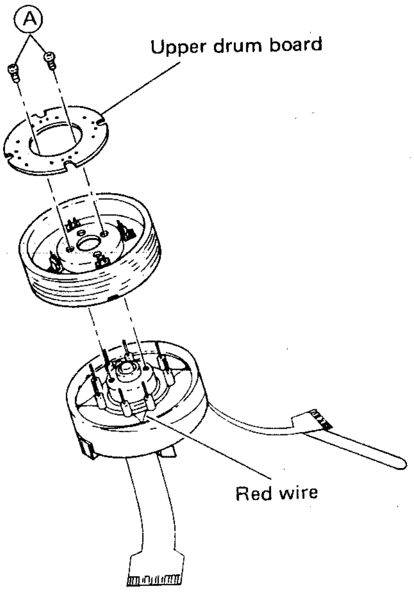


Fig. 2-4-1 Upper drum assembly

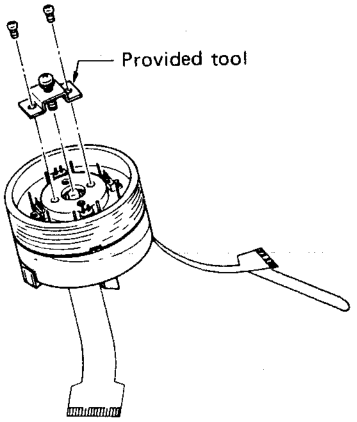
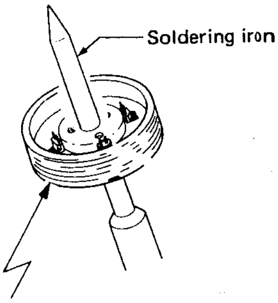


Fig. 2-4-2 How to set the provided tool



Make sure not to heat the upper drum itself over 85°C.

Fig. 2-4-3

Fitting holes of the upper and lower drums each other, settle a new upper drum as soon as possible.
(Slightly tighten two screws once, and then fasten them after the upper drum gets cold.)

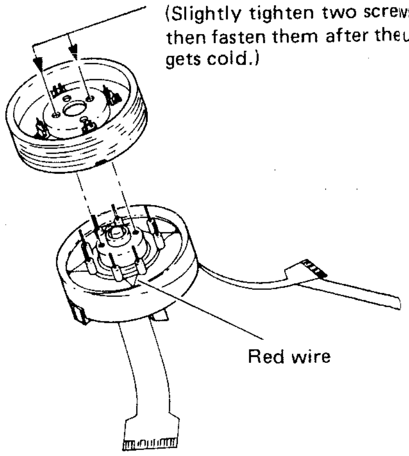


Fig. 2-4-4

2.5 CHECK AND ADJUSTMENT

Before replacing or removing the following parts, make sure to confirm their positions particularly in relation to others for a reference of re-assembling.

2.5.1 Phase adjustment of cam gears and loading rings

When removing or replacing take-up and supply loading rings, make sure to set the loading ring's position for the Stop mode beforehand (see Fig. 2-5-1).

1. Remove the worm gear (inside the loading motor bracket assembly) in advance, turn the take-up/supply loading ring in the unloading direction.
2. Adjust positions of the take-up and supply loading rings so that their hole and V-shaped notch are located in a straight line to the triangle mark of the main deck (viewed from the top, see Fig. 2-5-1[a]).

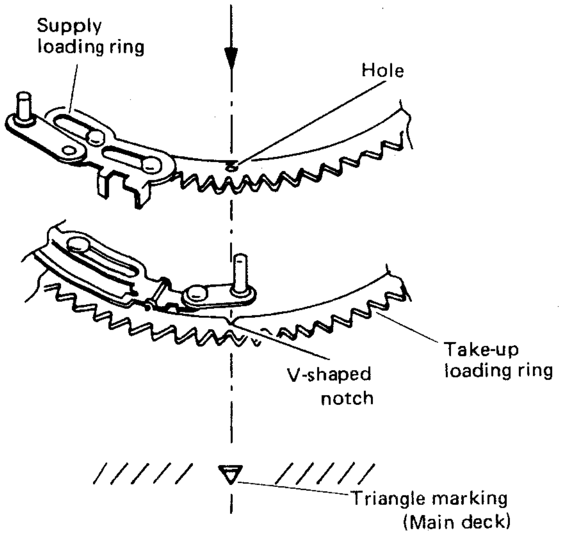

Supply loading ring
Hole
Take-up loading ring
V-shaped notch
Triangle marking (Main deck)

Fig. 2-5-1(a) Phase adjustment of loading rings

During phase adjustment of the loading ring, keep the eject lever located on the rear of the deck depressed downward (in the direction of the reel). See Fig. 2-5-1(b). If the eject lever is off the above-mentioned position, it does not work for ejection.

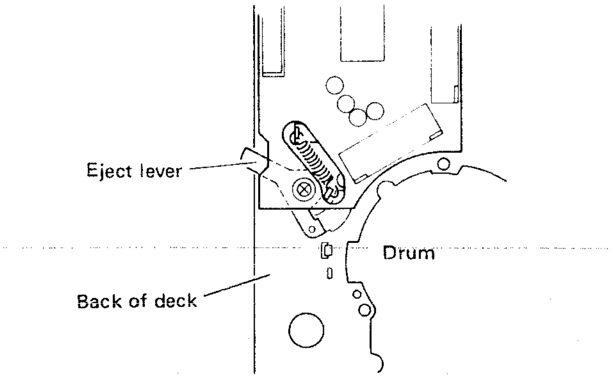

Eject lever
Drum
Back of deck

Fig. 2-5-1(b) Phase adjustment of eject lever

3. As stated in the above item 2, two loading rings should be correctly positioned before re-assembly. In regard with this work, it is recommended to attach one of three ring guides (the nearest one to the take-up side or to the A/C head) to the two loading rings to make the work easy.
4. To enter the mechanism into the Stop mode, position the control cam gear's marking and the center of the terminal gear's axis as shown in Fig. 2-5-2.

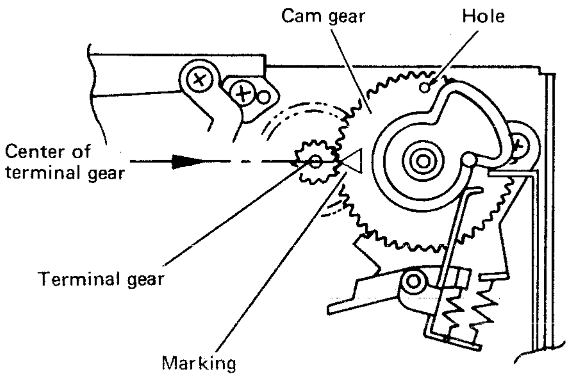

Cam gear
Hole
Center of terminal gear
Terminal gear
Marking

Fig. 2-5-2 Phase adjustment of control cam

2.5.2 Mode control switch

1. In the Stop mode, the mode control switch is set in the phase shown in Fig. 2-5-3.

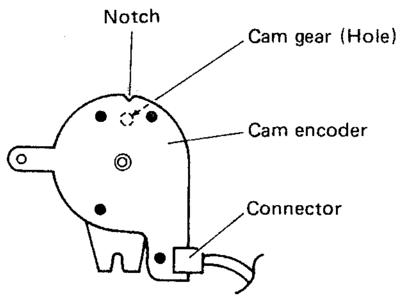

Notch
Cam gear (Hole)
Cam encoder
Connector

Fig. 2-5-3 Phase adjustment of mode control switch

2.5.3 Middle pole

1. In the Stop mode, relative position of the middle pole and the arm gear is as shown in Fig. 2-5-4.

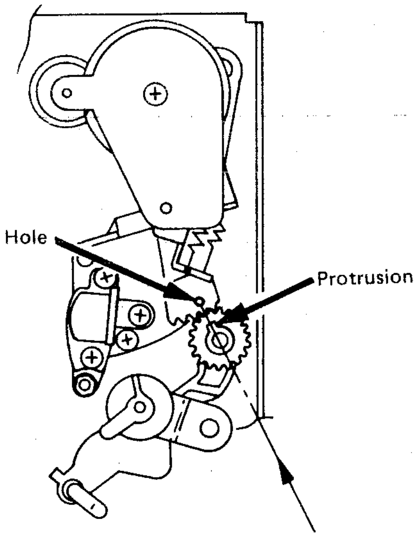


Fig. 2-5-4 Phase adjustment of middle pole

2.5.4 Checkup of tension pole position and back tension adjustment

Load the mechanism with a cassette and set it for the playback mode. Then, confirm that centers of the tension pole assembly and the impedance roller are in a straight line to the front of the deck (in the direction of the cassette housing). See Fig. 2-5-5.

Note: Torque can be adjusted by turning the torque adjustment screw 1 (Fig. 2-5-5), namely, torque increases by turning it clockwise while decreases by counterclockwise turning.

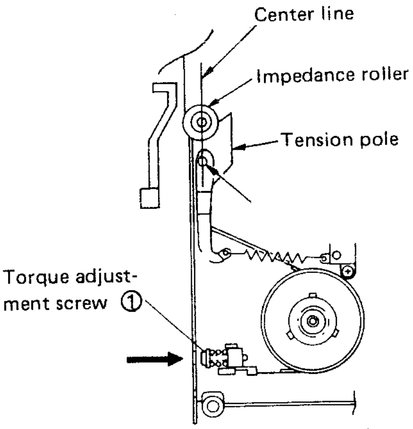


Fig. 2-5-5 Phase adjustment of tension pole

2.6 CHECK AND ADJUSTMENT OF TAPE TRANSPORT SYSTEM

Note: Generally, the tape transport system does not require any adjustment since it has been precisely adjusted at the factory.
However, this adjustment is needed when parts of the tape transport system were replaced as a result of a long-time use or any trouble in the system.

2.6.1 Guide rollers

1. Guide roller height adjustment is required in order to attain FM waveform linearity at the drum input and output sides in the procedure of the interchangeability adjustment.
2. With a cassette tape (except alignment tapes) running, adjust the height of the supply guide roller with a hex. wrench (1.4 mm) so that the tape runs smoothly along the drum lead at the drum entrance side.
3. For the drum exit side, adjust the take-up guide roller height in the same manner as above.

2.6.2 Impedance roller

Note: In principle, any adjustment of the impedance roller should not be done since the impedance roller has the reference height of the supply side and the nut securing it is not for adjustment but just for fixing.

1. For a reference, relative position between the main deck and the impedance roller is shown in Fig. 2-6-1.
This is a reference height of the supply side (for the tape entrance, etc.).

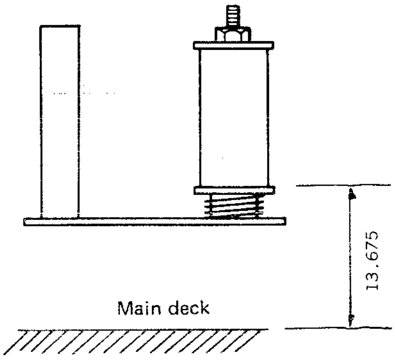


Fig. 2-6-1 Impedance roller height

2.6.3 Audio/control (A/CTL) head
(located by the take-up guide pole)

Note: Adjustment of audio/control head is given much weight in the interchangeability adjustment.

1. After completion of the take-up guide roller adjustment, adjust the A/CTL head's inclination so that the tape runs smoothly along the flange of the take-up guide pole.
   This adjustment can be performed by turning the screw ② with a precision screwdriver (cross-head,⊕).
   See Fig. 2-6-2.
2. By way of an example of the adjustment, turn the screw 2 counterclockwise to wrinkle the running tape around the bottom of the take-up guide pole, and then slowly turn the screw clockwise until no wrinkles are not found in the tape.
3. Next, proceed to adjustments of its azimuth and height.

Note: There is no place for adjustment of the take-up guide pole since it has been precisely adjusted as a reference height of the take-up side (tape outlet side).

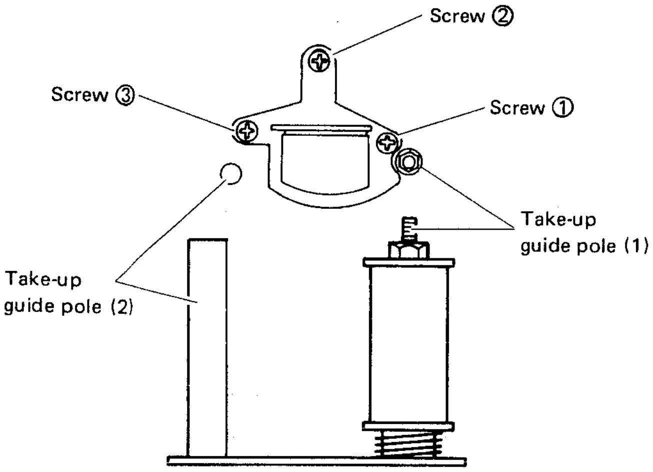


Fig. 2-6-2 A/CTL head adjustment

2.7 CHECK AND ADJUSTMENT OF INTERCHANGEABILITY

Note: Before using an expensive alignment tape for the interchangeability adjustment, it is recommended to use an ordinary cassette tape to check up no trouble in tape running. If there is any trouble in the tape running, find the cause and remedy it first.

2.7.1 FM waveform

For checking and adjusting FM waveforms, use the alignment tape MH-C1 and stairstep signals.

1. Play back the alignment tape MH-C1 and adjust the tracking control to obtain the maximum FM waveform. At this time, confirm that the waveform is the standard video FM waveform as shown in Fig. 2-7-1, namely, [a] (maximum output), [b] (minimum output at the center of waveform), [c] (minimum output at the drum intake – input portion), and [d] (minimum output at the drum outlet – output portion) are in the relationship shown below.

$\frac{b}{a} \geqq 0.8 \qquad \frac{c}{a} \geqq 0.7 \qquad \frac{d}{a} \geqq 0.7$

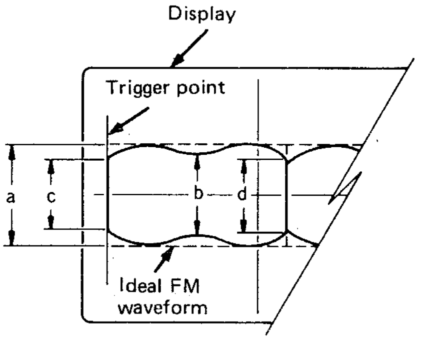


Fig. 2-7-1 FM waveform (standard video FM waveform)

2. If the waveform does not satisfy the standard conditions or it is far from linear (parallel) variation, re-adjustment is needed. If the waveform is far from the parallel shape, it causes a partial level drop owing to a slight tracking error, which may result in noise occurrence.
3. Turn the tracking control to vary the FM waveform from maximum to minimum, and vice versa, and confirm that the FM waveform varies rather parallel at the drum intake (input) side.
   If FM waveform irregularly changes, for example, expanded portion becomes narrow or narrowed portion expands, it is because of incorrect height of the supply guide roller (incorrect tape running along the drum lead at the drum intake). Such being the case, adjustment of the supply guide roller height is very important for correct and smooth tape running and to obtain satisfactory FM waveform variation of rather parallel lines. (See Fig. 2-7-2.)

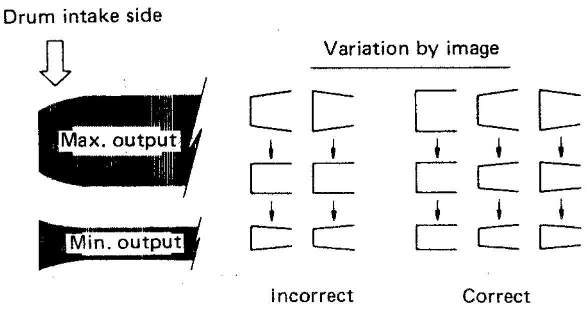


Fig. 2-7-2 FM waveform variation at drum intake

4. In the same manner as above, check up FM waveform variation between maximum and minimum outputs whether they are nearly in parallel lines or not. If not, adjust the take-up guide roller height (tape outlet side). See Fig. 2-7-3.
5. Next, perform fine adjustments of the take-up and supply guide roller heights for entire FM waveform variation between maximum and minimum outputs by the tracking control operation so that every variation shows parallel and linear lines.
6. After completion of the height adjustments for the take-up and supply guide rollers, confirm that there is no wrinkle nor damage in the tape around the impedance roller and take-up guide pole. If such the symptom is found around the supply impedance roller which functions as the lower limiter of the tape, fine adjust the roller's position slightly downwards. This adjustment must be done only for the supply impedance roller.
   On the other hand, if such the symptom is seen around the take-up guide pole, adjustment should be performed not for the take-up guide pole but for the A/CTL head by adjusting its inclination (for correct tape contact) to travel the tape correctly along the flange on the bottom of the guide pole.
   After confirmation of normal tape running, check up entire FM waveform again.

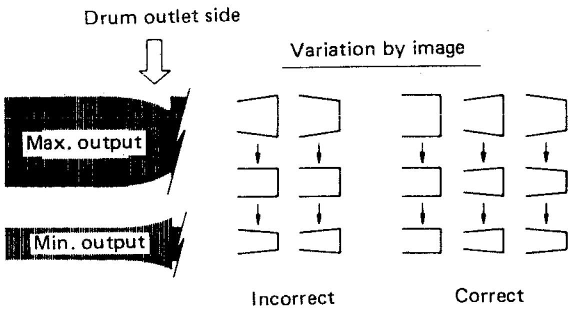


Fig. 2-7-3 FM waveform variation at drum outlet side

2.7.2 A/CTL (audio/control) head adjustment

Incorrect positioning of the A/CTL head causes reduced audio output when a tape is played back by another video deck, deterioration in S/N, and in a severe case, interference in servo stability due to inability to pick up control signals. To observe audio signals connect an oscilloscope to the audio output terminal.

1. Play back the stairstep segment (7 kHz audio signal) of the alignment tape MH-C1.
2. Adjust the A/CTL head height by turning screws Ⓐ, Ⓑ and Ⓒ precisely and evenly.

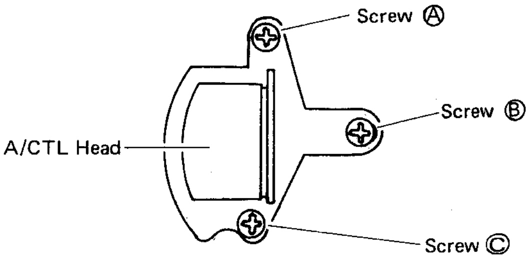


Fig. 2-7-4

3. Turn the screw Ⓐ to obtain the maximum audio output.
4. Turn the screws Ⓐ , Ⓒ and Ⓑ evenly little by little in the same direction to change height of the A/CTL head, and settle it for the maximum audio output.
   output.

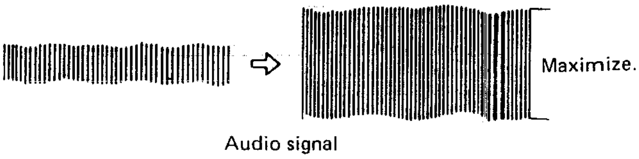


Fig. 2-7-5 A/CTL head adjustment

2.7.3 Control head phase (X value) adjustment

If the phase (X value) of the control head is coming off, it causes timelag between playback picture and voice. This symptom remarkably appears in the EP mode comparing with the standard mode.

For this adjustment, set the tracking control at the center detent (AUTO) position.

1. Connect an oscilloscope to TP109 (TP FM) of the MAIN board (SERVO) and observe the waveform.
2. Play back the stairstep signals of the alignment tape MH-C1.
3. Slightly loosen screws Ⓓ and Ⓔ of the A/CTL head and set the tip of the A/CTL head positioning jig in the groove and guide hole respectively. Then, pull the A/CTL head fully in the direction of the capstan. (See Fig. 2-7-6.)
4. Moving the A/CTL head in the reverse direction of the above step 2, observe variation of CH-1 FM waveform and stop moving the head at the first point where the output becomes maximum. Then, tighten the screws Ⓓ and Ⓔ.

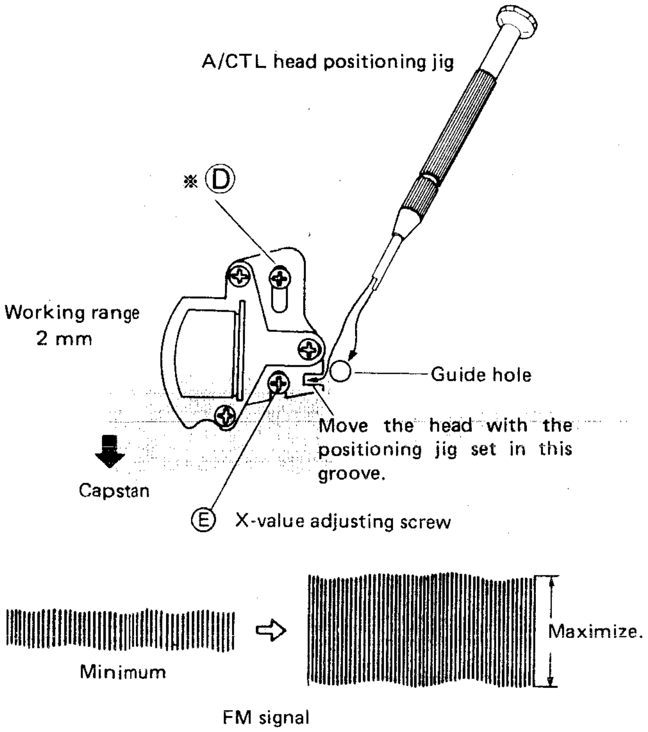

A/CTL head positioning jig
※Ⓓ
Working range
2 mm
Guide hole
Move the head with the positioning jig set in this groove.
Capstan
Ⓔ X-value adjusting screw
Minimum
Maximize.
FM signal

Fig. 2-7-6 X-value adjustment

2.7.4 Final check

1. Confirm that the FM waveform recorded by the subject deck satisfies the standard of video FM waveform shown in Fig. 2-7-1. At the same time, also confirm that the switching point does not come off.

SECTION 3
ELECTRICAL ADJUSTMENTS

3.1 DECK SECTION

3.1.1 Precautions

Electrical adjustments are generally necessitated after replacing worn mechanical parts or video heads because of interrelationship between those parts and various electrical circuits.

In the event of malfunction with electrical circuits, troubleshooting with the aid of proper test instruments must be done first, and then, commence necessary repair, replacement, and adjustment, etc.

For adjustment of electrical circuits equipped with trimming resistors, replace those necessary for the adjustment with variable resistors only in the servicing period.

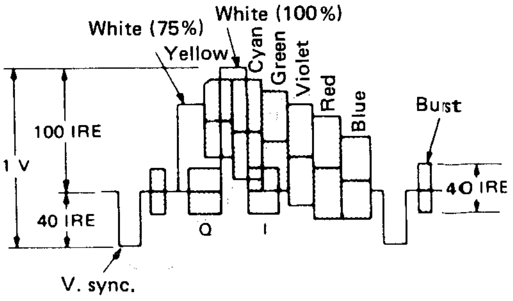
At field service without a complete range of test instruments, avoid unnecessary disturbance of the internal control settings. For satisfactory repair and adjustment, send back the unit to the factory or to the nearest authorized service center.

3.1.2 Adjustment procedures and terms used in this section

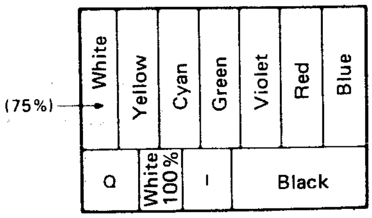
No.	Order of adjustment and checkup
Item	Name of adjustment and checkup
Check point . . .	Point(s) to be connected with test instruments
Adjustment parts:	Parts such as variable resistors, trimmer capacitors, etc. to be adjusted.
Mode & signal .	External input signal and mode necessary for adjustment
Color bars:	Input color bars signal
Stairstep:	Input stairstep signal
1 kHz:	Input 1 kHz audio signal
MH-C1 color bars:	Color bars signal of MH-C1 alignment tape to be played back
MH-C1 stairstep:	Stairstep signal of the same
MH-C1 3 kHz:	3 kHz audio signal of the same
MH-C1 1 kHz:	1 kHz audio signal of the same
MH-C1 RF sweep:	RF sweep signal of the same
CH-C1L color bars:	Color bars signal of CH-C1L alignment tape to be played back
STOP:	Stop mode with the power turned on
REC:	Recording mode
PB:	Playback mode
REC → (other mode):	Record on a blank tape which will be used in other mode(s)
PAUSE/STILL:	Still playback mode
SHUTTLE SEARCH:	Shuttle search (normal and reverse) playback mode
DUBBING:	dubbing mode
EJECT:	Ejection of loaded cassette
Description . . .	Method of checkup and adjustment, waveform, notice, etc.

3.1.3 Required test equipment

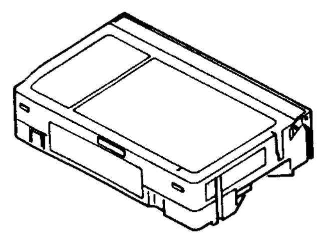
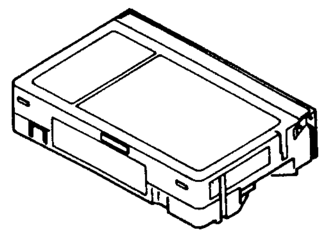
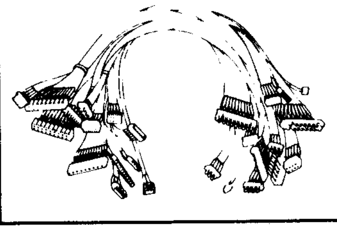
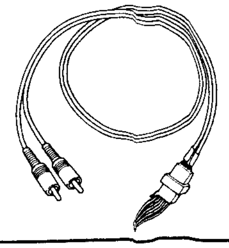
1. Color monitor TV
2. Oscilloscope
3. Video cassetter for checkup
4. Frequency counter
5. Audio tester
6. Regulated DC power supply
7. Digital voltmeter
8. Blank tape (TC-20) for recording and playback
9. Standard electrical service tools, etc.



Waveform of color bars signal



Color bars pattern

Alignment tape (MH-C1)	Check tape (EP mode) (CH-C1L)	Patch cord YTU93001B	Y/C separator tool YTU93006
			

3.1.4 External supply of video signals

• Connection of Y/C separator

See Fig. 3-1-1.

Connect the Y/C separator's DC OUT cable to DC IN of the GR-S55U deck and supply 9.6 V DC to the separator's DC IN terminal from AA-V5U, etc.

Next, connect the red terminal of the attached cable to C OUT of the Y/C separator while the white terminal to Y OUT, and connect the cord of a signal (color bars) generator to VIDEO IN of the Y/C separator.

In the state that the signal generator is supplying color bars signal to every connected circuit, perform adjustments according to the adjustment procedures (for REGULATOR, SERVO, Y/C and AUDIO boards) herein described.

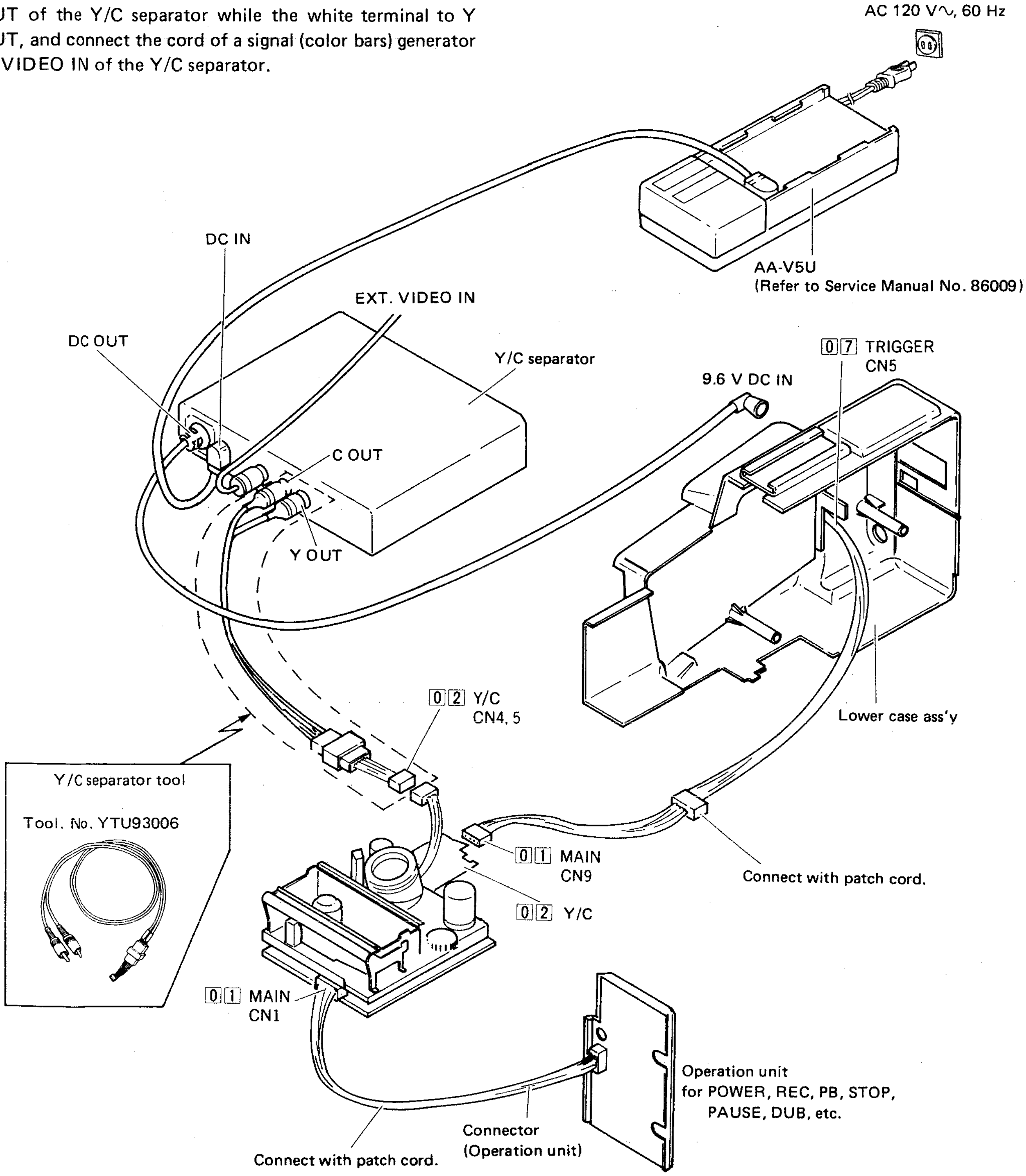

AC 120 V∿, 60 Hz
AA-V5U
(Refer to Service Manual No. 86009)
DC IN
EXT. VIDEO IN
DC OUT
Y/C separator
07 TRIGGER
CN5
9.6 V DC IN
C OUT
Y OUT
02 Y/C
CN4, 5
Lower case ass'y
Y/C separator tool
Tool. No. YTU93006
01 MAIN
CN9
Connect with patch cord.
02 Y/C
01 MAIN
CN1
Operation unit
for POWER, REC, PB, STOP,
PAUSE, DUB, etc.
Connector
(Operation unit)
Connect with patch cord.

Fig. 3-1-1

3.1.5 Emergency mode

1. Emergency mode table

No.	DISPLAY FRASH	CONTAINS	OBSERVE MODE	SHIFTED MODE
0	▶▶	PB CTL pulse input absent	During Zero Frame Editing	STOP
1	◀◀			
2	▶ ▶▶	Drum flipflop input absent	Drum rotates, Zero Frame Editing	STOP
3	▶ ◀◀	Reel sensor input absent	PB, REC, S FF	STOP
4	❚❚	REG 5 V level abnormal	All modes	MAINTENANCE
5	▶ ❚❚	Loading motor rotates for more than 10 seconds without shift to next mode.	LOADING, UNLOADING	
6	—	Emergency input (H) at EMG pin	All modes	Power OFF

Emergency mode	:	Indication for 5 minutes, then power OFF (power not turned OFF when using AC adapter)
Port states	:	Same as Stop mode
Effective key	:	POWER
Shifted mode	:	Power OFF
No. 6	:	Emergency shut off can be used for short test, etc. Emergency input is "H" and EMG terminal. Power OFF in all modes and all I/O are initialized.

2. To release the Emergency mode to perform repair, short pins 2 (TEST 1) and 3 (TEST 2) of the MAIN board CN-15 (indicated by arrow A in figure) to pin 1 (GND). This will release the Emergency mode. When releasing the Emergency mode, be sure to disconnect the power plug in order to reset the mechacon CPU. If this is not done, the mode may not be fully released.

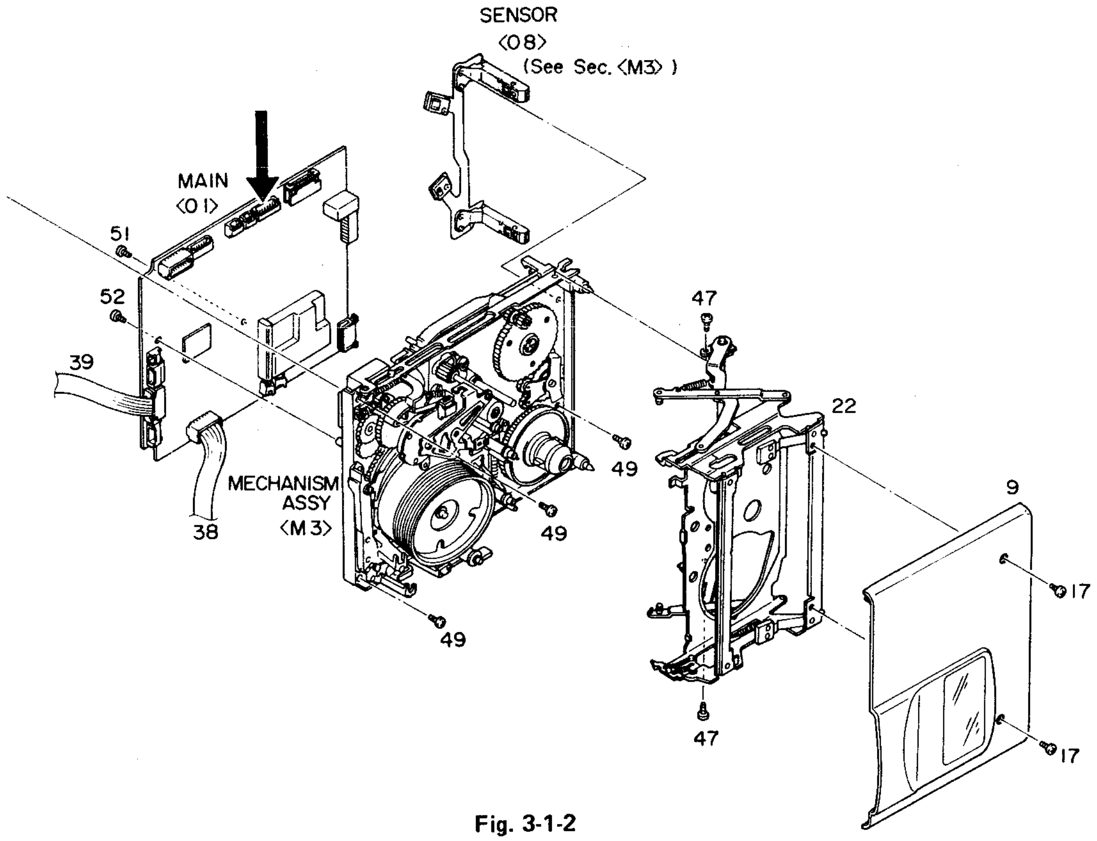

SENSOR
<08>
(See Sec. <M3>)
MAIN
<01>
51
52
39
38
MECHANISM ASSY
<M3>
47
22
49
49
49
9
17
17
47

Fig. 3-1-2

3.1.6 Appearance and connection of cables (YU40272-3)

- **Audio/Video cable**

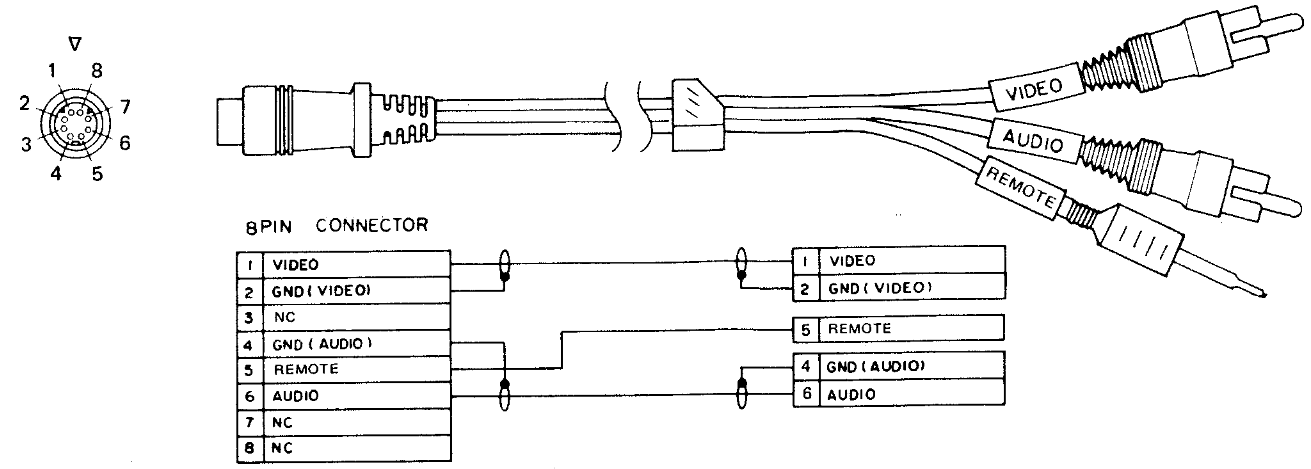

1
8
2
7
3
6
4
5
VIDEO
AUDIO
REMOTE
8PIN CONNECTOR
1 VIDEO
2 GND (VIDEO)
3 NC
4 GND (AUDIO)
5 REMOTE
6 AUDIO
7 NC
8 NC
1 VIDEO
2 GND (VIDEO)
5 REMOTE
4 GND (AUDIO)
6 AUDIO

Fig. 3-1-3

- **Audio/Video input cable assembly (VC-V012U)**

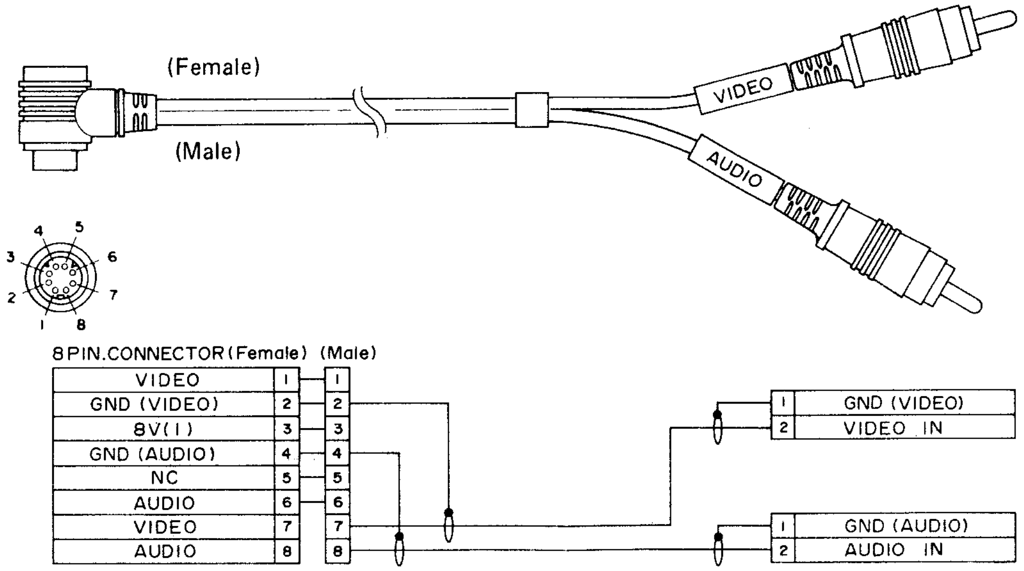

(Female)
(Male)
VIDEO
AUDIO
4
5
3
6
2
7
1
8
8PIN.CONNECTOR (Female) (Male)
VIDEO 1
GND (VIDEO) 2
8V(I) 3
GND (AUDIO) 4
NC 5
AUDIO 6
VIDEO 7
AUDIO 8
1 GND (VIDEO)
2 VIDEO IN
1 GND (AUDIO)
2 AUDIO IN

Fig. 3-1-4

- **8-pin/10-pin conversion cable assembly (VC-V810U)**

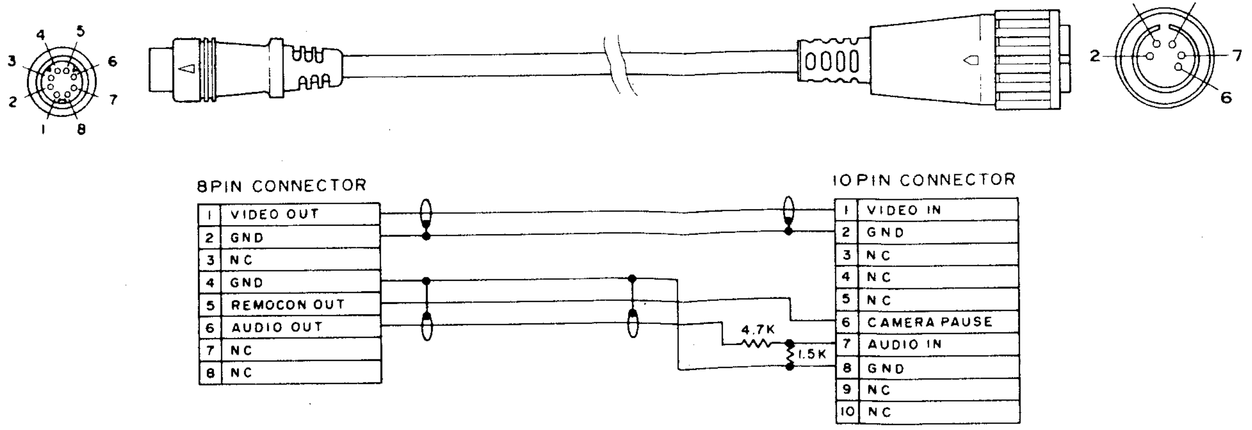

4
5
3
6
2
7
1
8
1
8
2
7
6
8PIN CONNECTOR
1 VIDEO OUT
2 GND
3 NC
4 GND
5 REMOCON OUT
6 AUDIO OUT
7 NC
8 NC
10PIN CONNECTOR
1 VIDEO IN
2 GND
3 NC
4 NC
5 NC
6 CAMERA PAUSE
7 AUDIO IN
8 GND
9 NC
10 NC
4.7K
1.5K

Fig. 3-1-5

- **Audio/Video Extension cable**

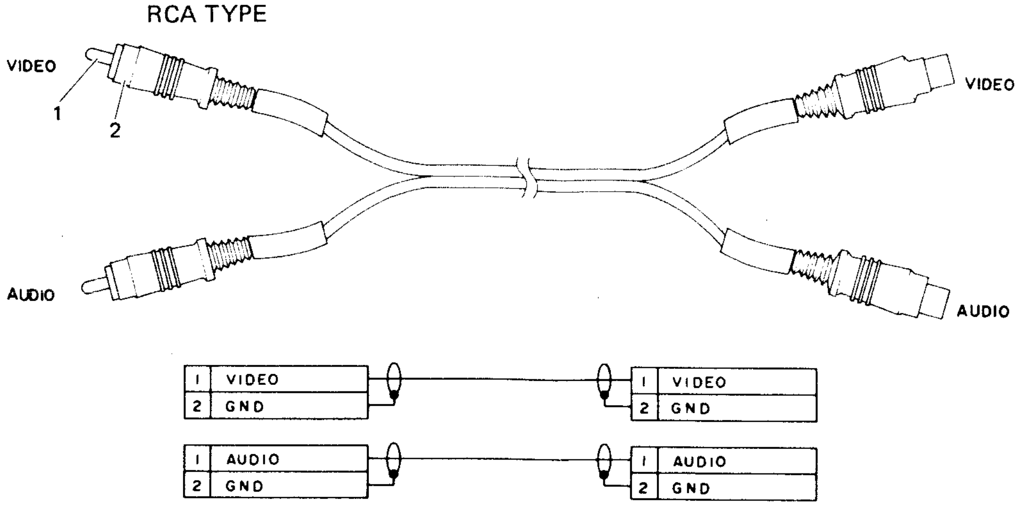

RCA TYPE
VIDEO
1
2
VIDEO
AUDIO
AUDIO
1 VIDEO
2 GND
1 VIDEO
2 GND
1 AUDIO
2 GND
1 AUDIO
2 GND

Fig. 3-1-6

- By engaging the flat cableconnector of the YTU93001B patch cord, since the electrical polarity becomes reversed, be sure to perform as follows.

Blue marked side is front.

Unmarked side is conductor. When inserting connector, perform in this manner.

- When connecting the card fit cable to the connector, pay careful attention to the cable's direction as well as its upper and lower sides. In short, as shown in Fig. 3-1-8, insert the cable's tip plated with copper into the connector's socket (opening like a come) so as to fit them each other.

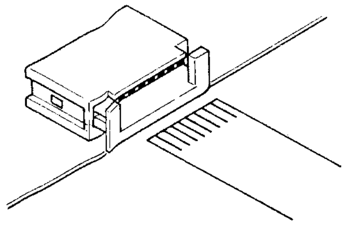


Fig. 3-1-8

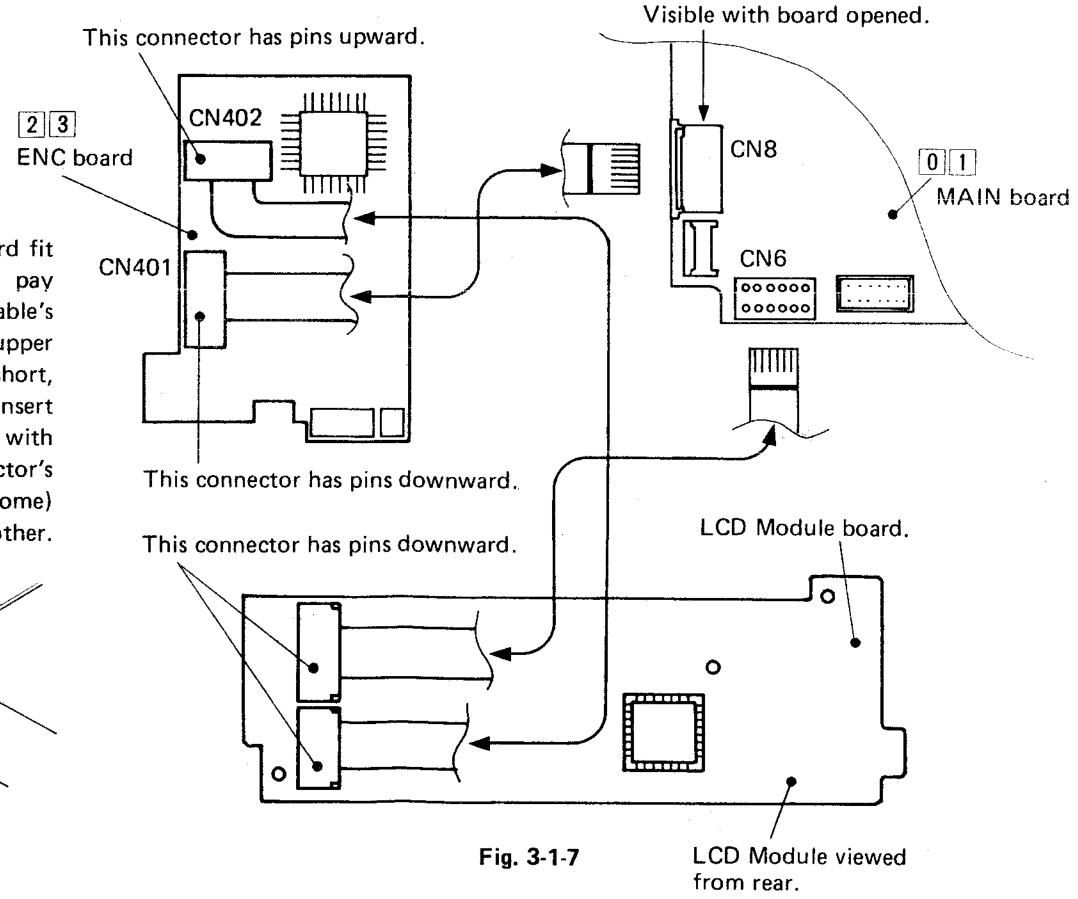

This connector has pins upward.
Visible with board opened.
23
ENC board
CN402
CN8
01
MAIN board
CN401
CN6
This connector has pins downward.
This connector has pins downward.
LCD Module board.
LCD Module viewed from rear.

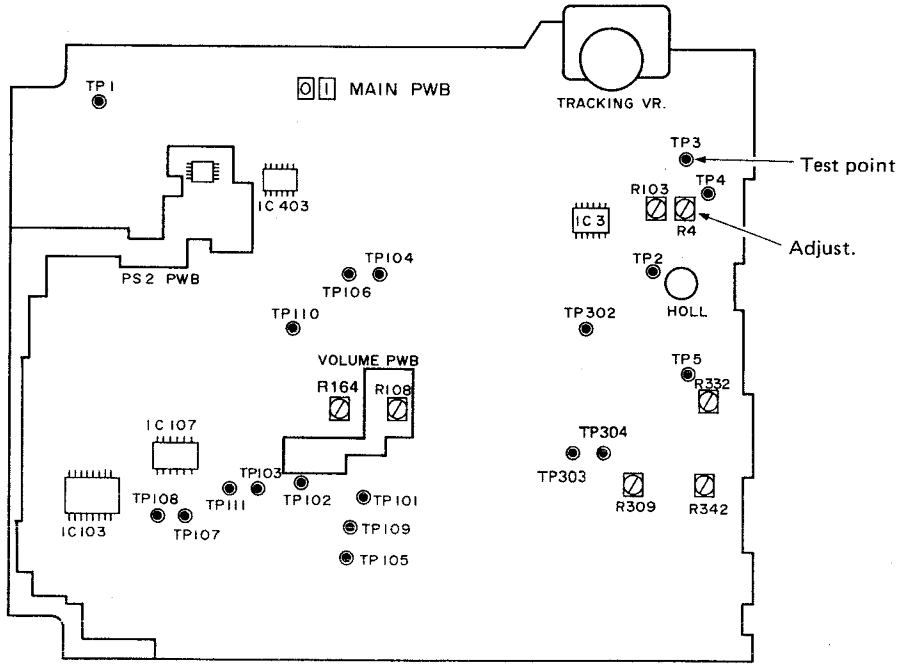
Fig. 3-1-7

- **For properly and correctly proceeding all the electrical adjustments described in this section, connect the Y/C separator to the Y/C board and supply color bars signal from the signal generator. (Refer to Section 3.1.4.)**

3.2 SWITCHING REGULATOR CIRCUIT (01 MAIN board)

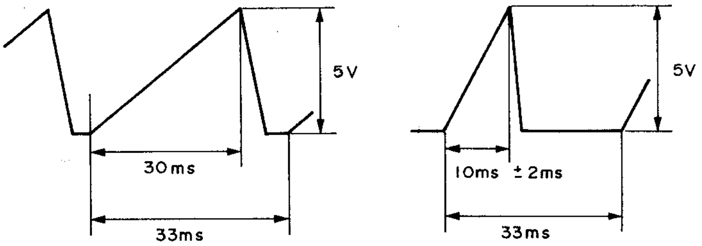
Note: Unless otherwise specified, all test points and adjustment parts are located on the MAIN board.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	Switching 8 V Power	• Normal made • Normal tape • Without input signal • REC mode • SP mode	TP3 (REG 8 V)	R4 (REG 8 V ADJ)	1) Connect a digital voltmeter between TP3 and GND, and adjust R4 to obtain 8 V switching power.


TP1
01 MAIN PWB
TRACKING VR.
TP3
Test point
R103
TP4
R4
Adjust.
IC 403
IC3
TP2
HOLL
TP104
TP106
PS2 PWB
TP110
TP302
VOLUME PWB
R164
R108
TP5
R332
IC107
TP304
TP303
TP103
R309
R342
TP108
TP111
TP102
TP101
TP109
TP105
IC103
TP107

3.3 SERVO CIRCUIT (01 MAIN board)

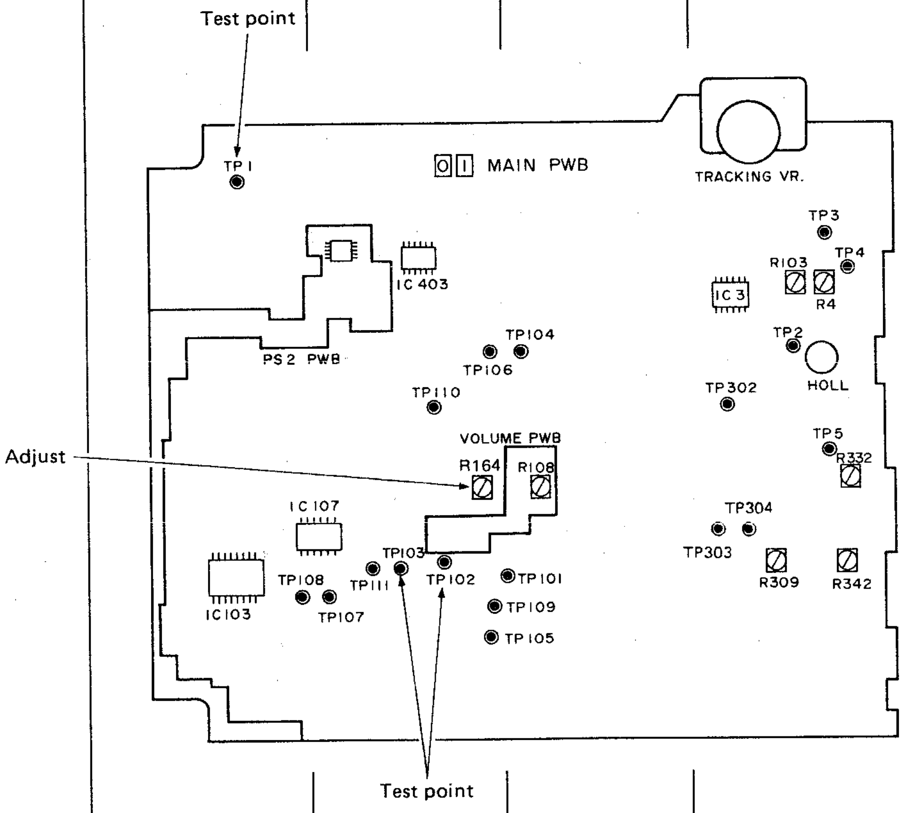
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	EP/SP Control Delay MMV	• STOP mode • SP mode • Shortcircuit between TP1 (SW 5 V [1] and TP102 (CTL DELAY REF)	TP103 (CTL DELAY)	R164 (EP/SP CTL DELAY)	1) Shortcircuit TP1 and TP102 with shorting wire, etc. 2) Set the SP/EP switch of the OPERATION board to EP position. 3) In Stop mode, adjust R164 so that period of the leading edge of TP103 signal becomes 30 ms. 4) Set the SP/EP switch of the OPERATION board to SP position, and check that period of the leading edge of TP103 signal is 10 ms. 5) Disconnect the shorting wire.

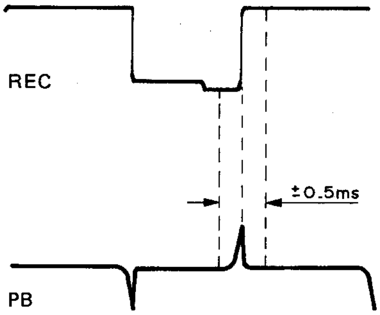


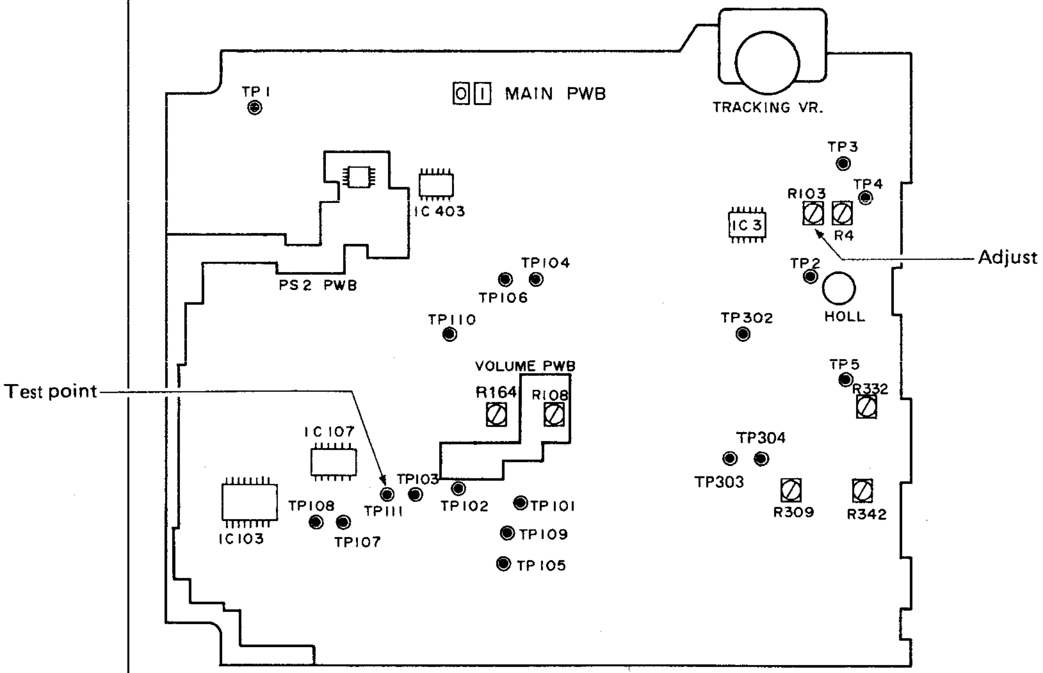
EP MODE STOP
(A)

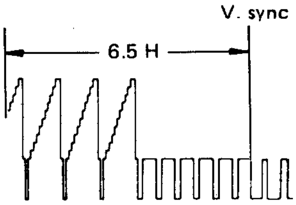
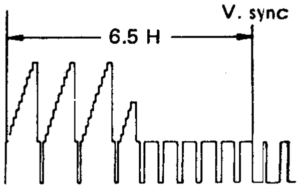
SP MODE STOP
(B)

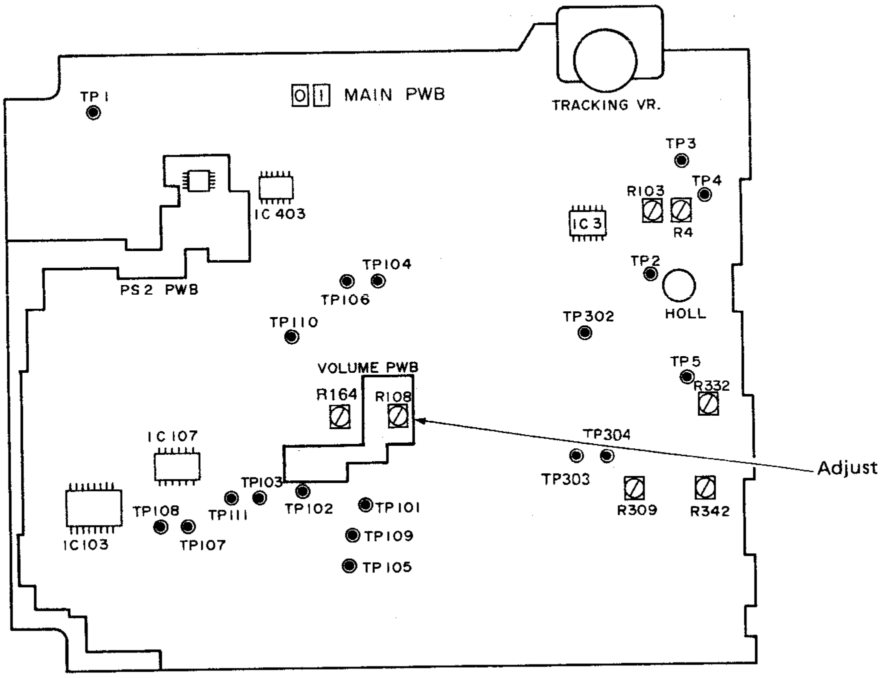
Fig. 3-3-1


Test point
TP1
01 MAIN PWB
TRACKING VR.
TP3
TP4
R103
R4
IC 403
IC 3
PS 2 PWB
TP104
TP106
TP2
HOLL
TP110
TP302
VOLUME PWB
TP5
R332
Adjust
R164
R108
IC 107
TP304
TP303
TP103
TP108
TP111
TP102
TP101
R309
R342
IC103
TP107
TP109
TP105
Test point

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
2	EP/SP Tracking Preset	• Normal mode • MH-C1 • Y/C separator • Stairstep • Tracking VR set at center detent • REC then PB • EP mode and SP mode	TP108 (PB CTL PULSE) TP111 (DRUM FF) Ext. trigger	R103 (TRACKING PRESET)	1) Connect an oscilloscope to TP108 and TP111 which is for external triggering, and set the mode for REC to record signals (EP mode). 2) Observe the leading point of waveform at TP108. 3) Play back the signal recorded in the above step 1), and adjust R103 so that relationship between rise-up point of TP108 waveform in REC and its positive pulse in PB becomes 0 ± 0.5 msec. 4) Perform the same procedures in 2) and 3) above in SP mode, and confirm the same relationship (TP108 waveforms in REC and PB) is 0 ± 2 msec.  EP mode **Fig. 3-3-2**

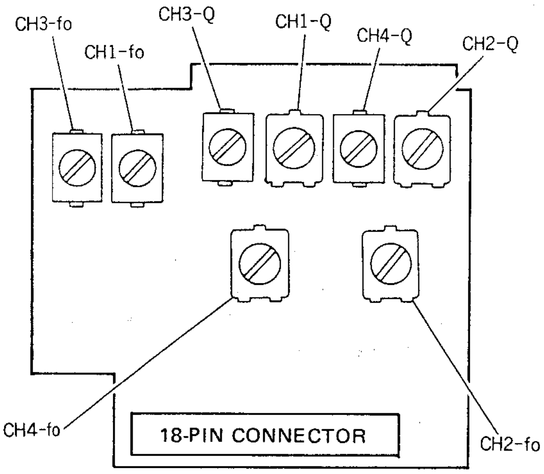
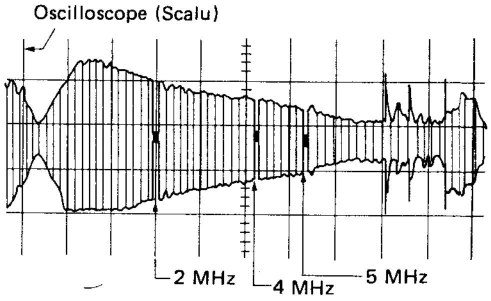
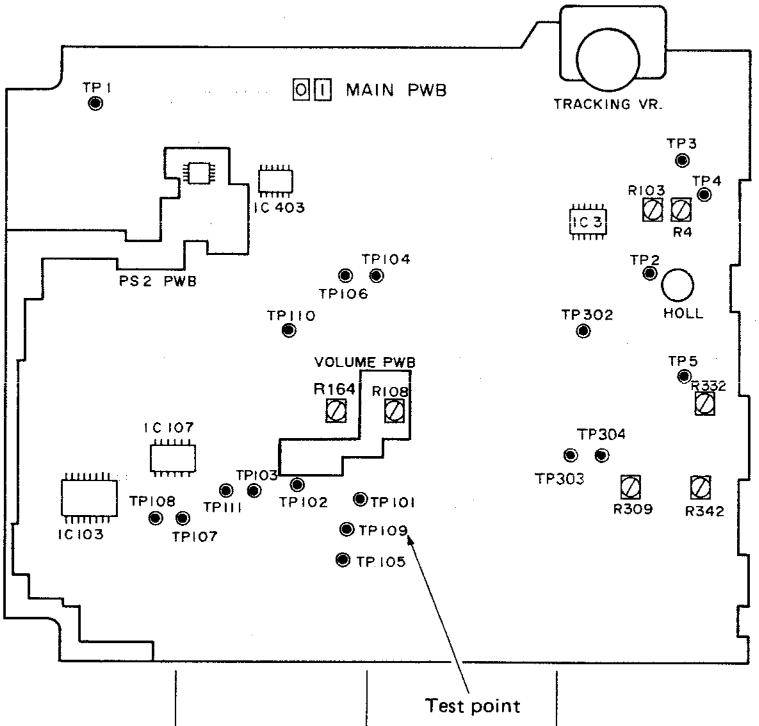

TP1
01 MAIN PWB
TRACKING VR.
TP3
TP4
R103
R4
IC3
IC 403
Adjust
TP2
HOLL
TP104
TP106
PS2 PWB
TP110
TP302
TP5
R332
VOLUME PWB
R164
R108
Test point
IC107
TP304
TP303
R309
R342
TP103
TP108
TP111
TP102
TP101
TP109
TP105
IC103
TP107

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
3	PB Switching Point	• MH-C1 • PB mode • Stairstep (–) trigger (+) trigger	VIDEO OUT TP111 (DRUM FF) Ext. trigger	R108 (PB CTL PULSE)	1) Connect the oscilloscope to VIDEO OUT and TP111 which is for external trigger, and play back the alignment tape MH-C1. 2) Set the oscilloscope for external triggering with minus (–) slope signal. 3) Adjust R108 so that the trigger point becomes 6.5H before V. sync.  Fig. 3-3-3 4) Set the oscilloscope for external triggering with plus (+) slope signal. 5) Check up that the trigger point is 6.5H before V. sync.  Fig. 3-3-4 6) Confirm that the trigger points with plus (+) and minus (–) slope signals are 6.5H before V. sync respectively in EP mode, too.


TP1
01 MAIN PWB
TRACKING VR.
TP3
TP4
R103
R4
IC3
IC 403
TP104
TP106
PS2 PWB
TP110
TP2
HOLL
TP302
TP5
R332
VOLUME PWB
R164
R108
IC 107
TP304
Adjust
TP303
TP103
TP108
TP111
TP102
TP101
R309
R342
IC103
TP107
TP109
TP105

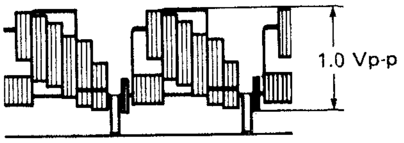
3.4 PREAMP CIRCUIT BOARD

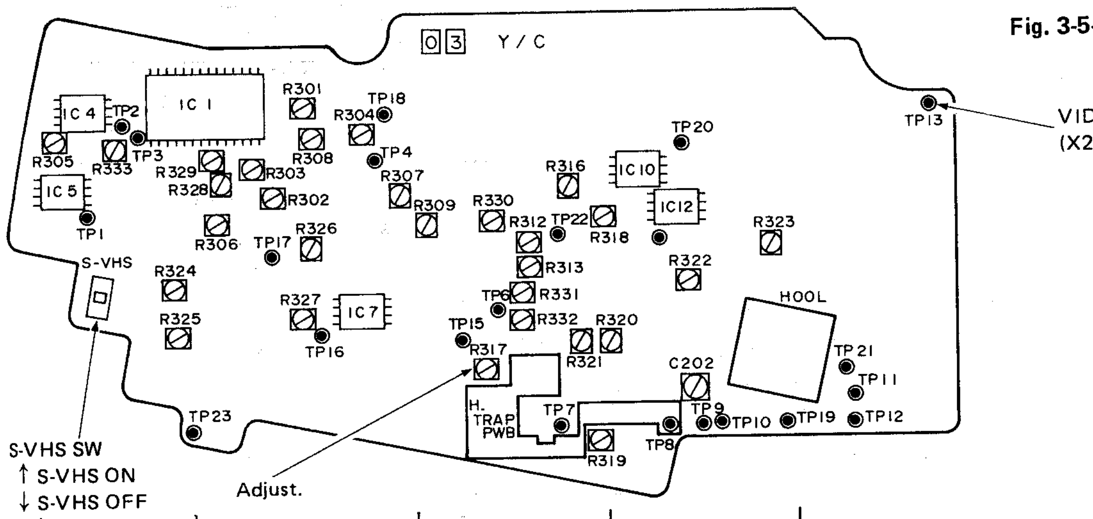
Note: Unless otherwise specified, all test points and adjustment parts are located on the PREAMP board.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	fo/Q Adj.	• Since any resonance adjustment of the heads must be very precisely performed, you had better not work the easy procedure hereinafter in practlce if permitted. In case it is necessary to replace the upper drum with new one, make sure to do it by the whole drum assembly (including the pre-amp board).			
		• MH-C1 • PB mode • RF sweep  CH3-fo CH1-fo CH3-Q CH1-Q CH4-Q CH2-Q CH4-fo 18-PIN CONNECTOR CH2-fo **Fig. 3-4-1** Pre-amplifier adjustments location	TP109 (TP FM)	CH-1: C2 (fo), R2 (Q) CH-2: C4 (fo), R4 (Q) CH-3: C1 (fo), R1 (Q) CH-4: C3 (fo), R3 (Q) PREAMP	1) Remove Y/C and MAIN boards. Connect these boards with patchcords. Remove the upper cover of the preamp shield case. 2) Connect the PREAMP and MAIN boards. Confirm video signal. 3) Connect oscilloscope to TP109 (TP FM) of the MAIN (Servo) board. 4) Observe the TP109 FM waveform and turn CH1 to CH4 clockwise to adjust for maximum 4.8 MHz region. 5) Observe the oscilloscope scale graduations. When the 2 MHz region is 2.5 scale divisions, adjust Q of CH1 to CH4 for 1 scale division.  2 MHz : 4.8 MHz = 2.5 : 1.5 **Fig. 3-4-2**
		 TP1 MAIN PWB TRACKING VR. TP3 R103 TP4 IC 403 IC3 R4 TP104 PS2 PWB TP106 TP2 HOLL TP110 TP302 VOLUME PWB TP5 R164 R108 R332 IC107 TP304 TP103 TP303 TP108 TP111 TP102 TP101 R309 R342 IC103 TP107 TP109 TP105 Test point			

3.5 Y/C CIRCUIT BOARD

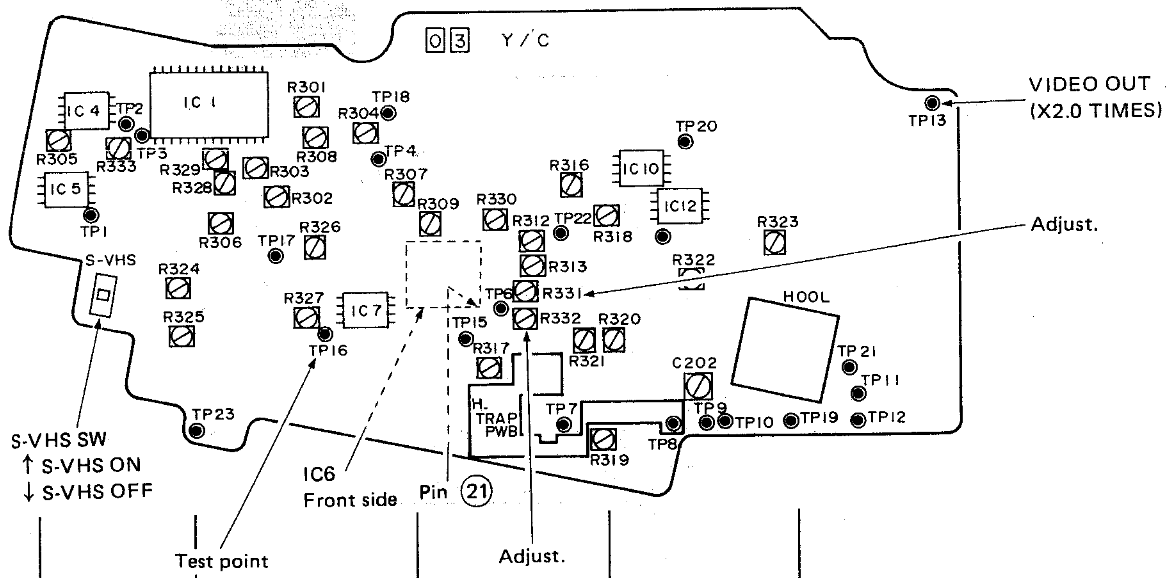
Note: Unless otherwise specified, all test points and adjustment parts are located on the Y/C board.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	E-E Y Level	• Normal mode • E-E mode • Color bars • Ext input	VIDEO OUT	R317 (E-E Y LEVEL)	1) Connect the oscilloscope to VIDEO OUT. 2) Adjust R317 so that signal level becomes 1.0 Vp-p.  **Fig. 3-5-1**



03 Y/C
IC 1
IC 4
IC 5
IC 7
IC10
IC12
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
R301
R302
R303
R304
R305
R306
R307
R308
R309
R312
R313
R316
R317
R318
R319
R320
R321
R322
R323
R324
R325
R326
R327
R328
R329
R330
R331
R332
R333
C202
HOOL
H. TRAP PWB
S-VHS
VIDEO OUT
(X2.0 TIMES)
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
Adjust.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
2	Carrier Deviation	• REC mode • No input signal	TP16 (N. REC FM)	R331 (CARRIER)	1) Connect the frequency counter to pin TP16. 2) In recording without input signal, adjust R331 so that frequency at TP16 (counter display) becomes 3.4 MHz±50 kHz.
		• REC mode • Color bars	IC6 pin ㉑	R332 (DEVIATION)	3) In recording color bar signal, adjust R332 so that frequency at pin ㉑ of IC6 becomes 30 mVp-p.
		• REC then PB • Color bars • Y/C separator			4) Record and play back the color bar signal. Connect the oscilloscope to VIDEO OUT. 5) During recording, adjust R332, and then play back so that the Y level becomes 1.0 Vp-p.



03 Y/C
IC 1
IC 4
IC 5
IC 7
IC10
IC12
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
R301
R302
R303
R304
R305
R306
R307
R308
R309
R312
R313
R316
R317
R318
R319
R320
R321
R322
R323
R324
R325
R326
R327
R328
R329
R330
R331
R332
R333
C202
HOOL
H. TRAP PWB
S-VHS
VIDEO OUT
(X2.0 TIMES)
Adjust.
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
IC6
Front side
Pin ㉑
Test point
Adjust.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
3	White & Dark Clip	• Normal mode • E-E mode • Color bars • Ext input	TP6 (EMPHASIS)	R313 (WHITE CLIP) R312 (DARK CLIP)	1) With the oscilloscope connected to TP6, adjust R313 and R312 so that white clip becomes 90 ± 5% and dark clip becomes 50 ± 5%, respectively.
4	REC FM Level	• Normal mode • REC mode • Color bars • Y/C separator	Test pin of pre-amplifier PRE AMP (Can be measured from the outside of the shield.)	R327 (REC FM LEVEL)	1) Connect the oscilloscope's probe to the test pin of the preamp. 2) Adjust R327, and then play back so that the signal level becomes 2.4 Vp-p at where the waveform comes to pedestal level.

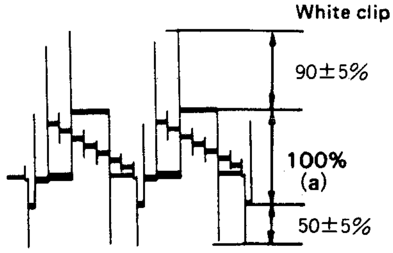
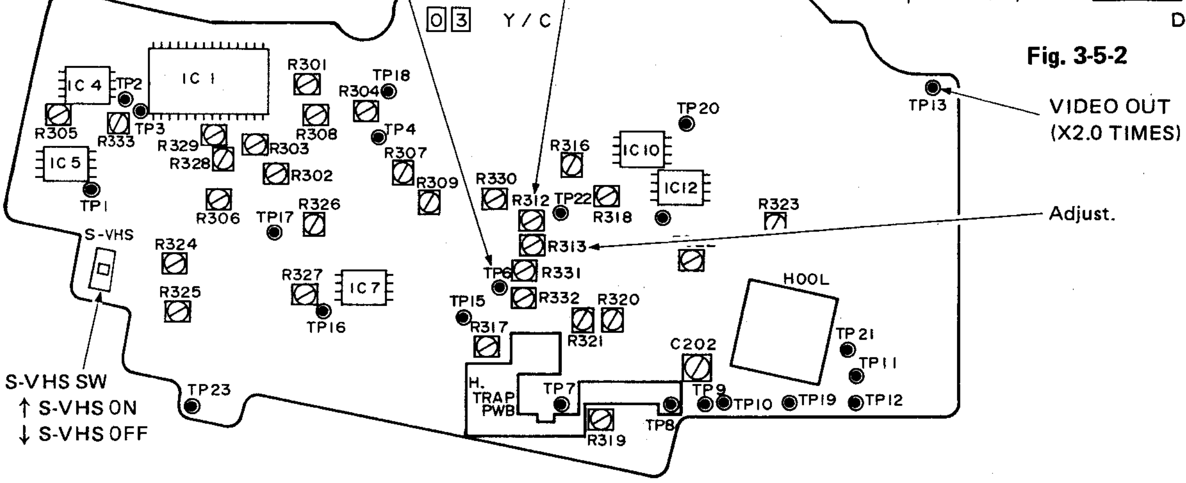


Fig. 3-5-2


Test point
Adjust.
03 Y / C
IC 1
IC 4
IC 5
IC 7
IC 10
IC 12
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
R301
R302
R303
R304
R305
R306
R307
R308
R309
R312
R313
R316
R317
R318
R319
R320
R321
R323
R324
R325
R326
R327
R328
R329
R330
R331
R332
R333
C202
HOOL
H. TRAP PWB
S-VHS
VIDEO OUT
(X2.0 TIMES)
Adjust.
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF

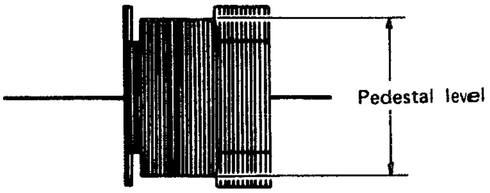
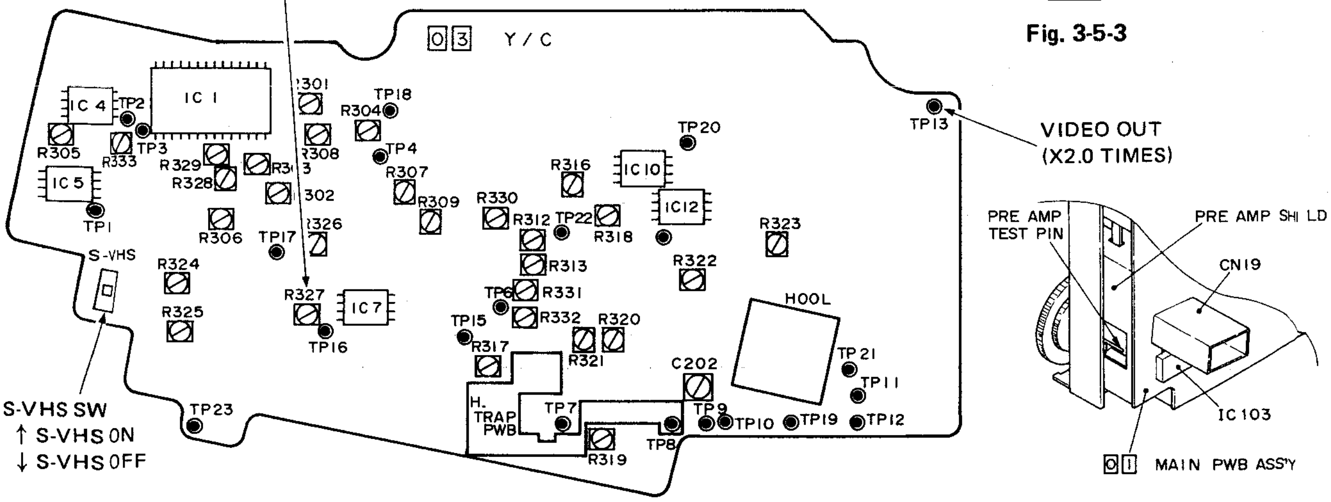
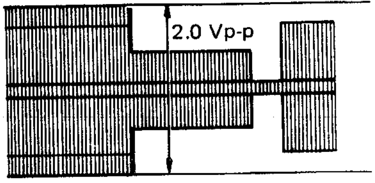
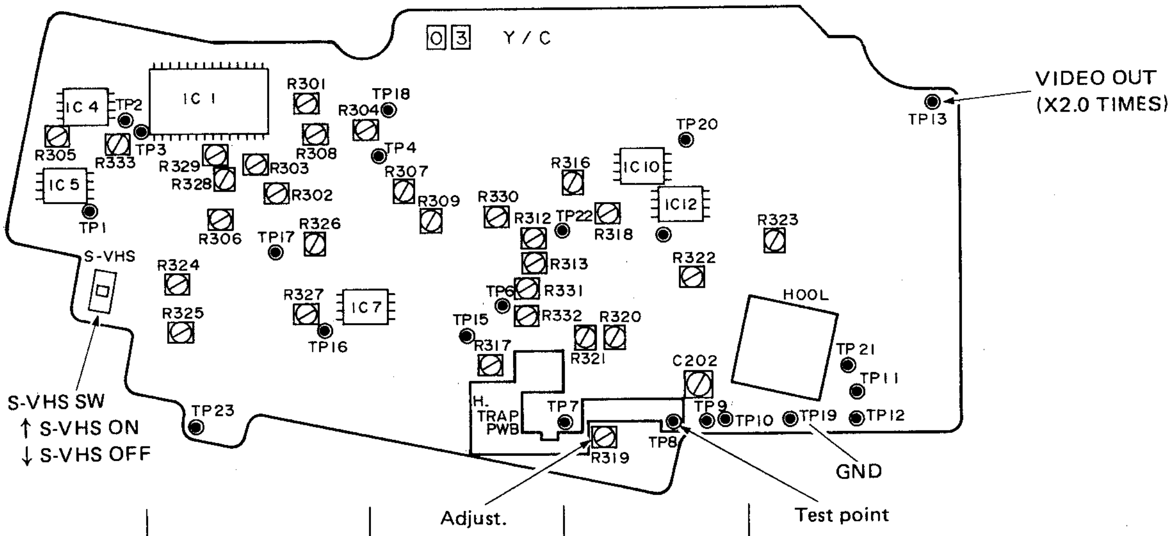
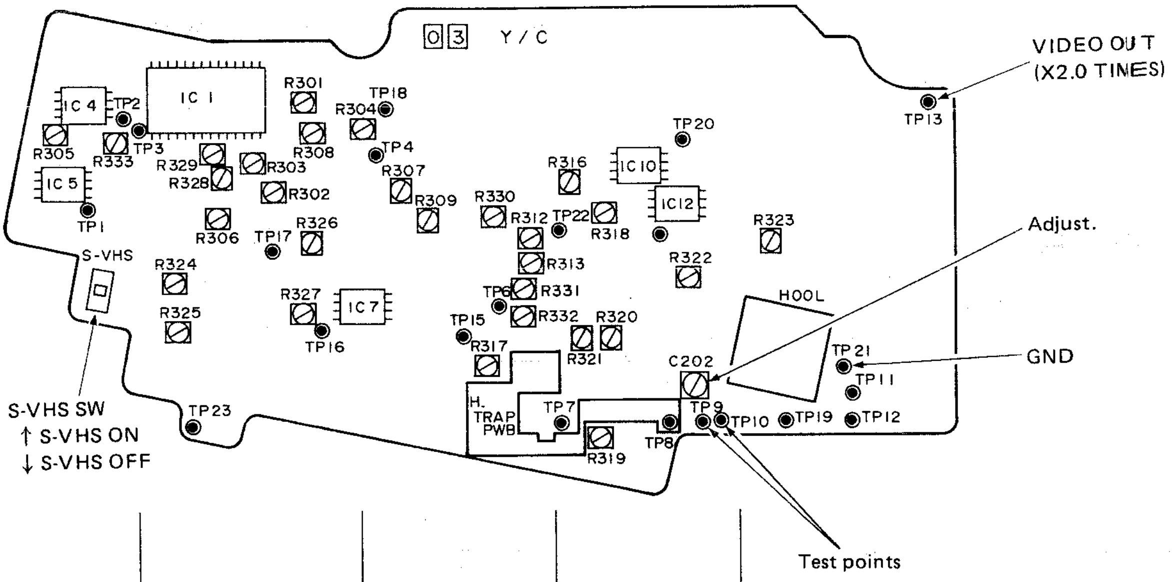


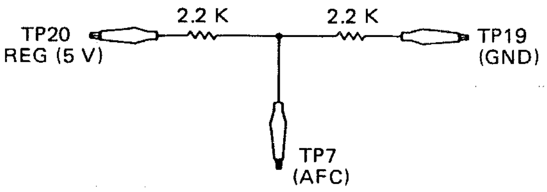
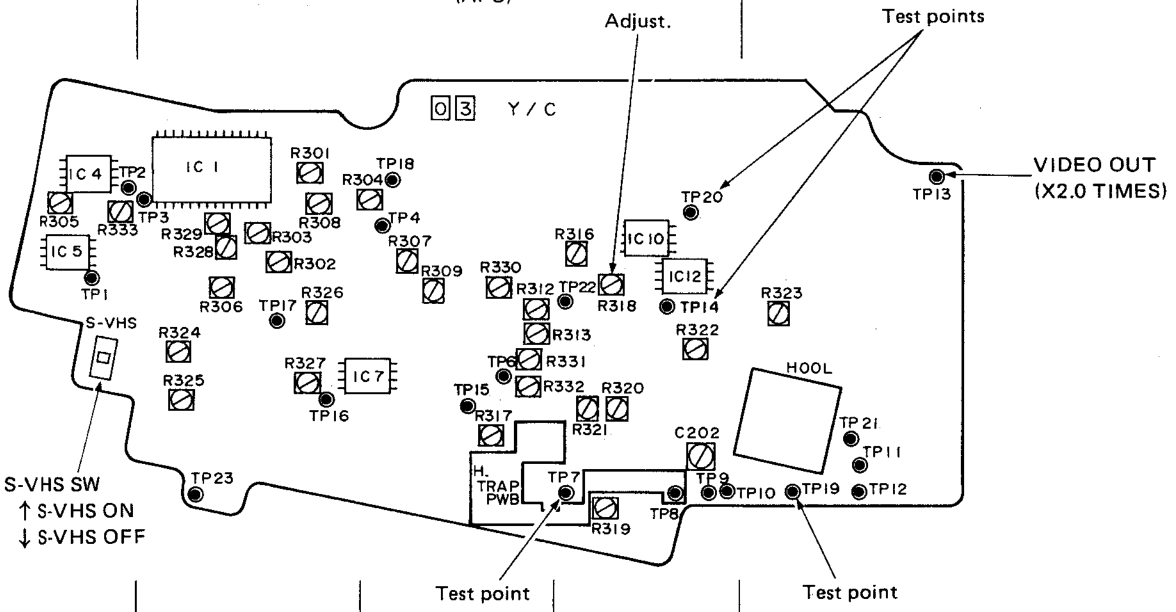
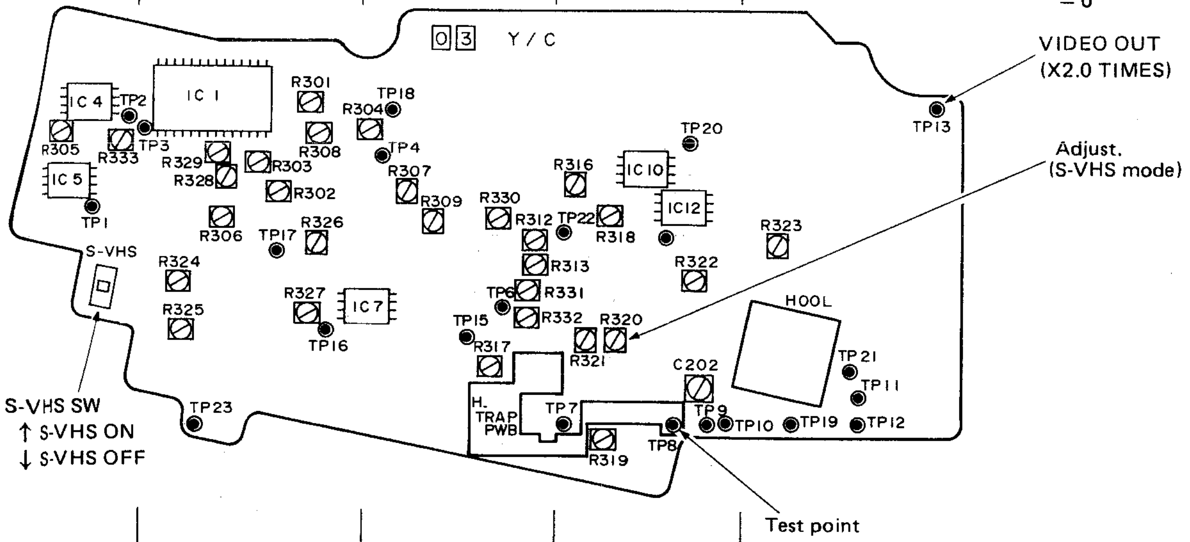
Fig. 3-5-3


Adjust.
03 Y / C
IC 1
IC 4
IC 5
IC 7
IC 10
IC 12
R327
R322
TP13
VIDEO OUT
(X2.0 TIMES)
HOOL
H. TRAP PWB
S-VHS
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
PRE AMP TEST PIN
PRE AMP SHILD
CN19
IC 103
01 MAIN PWB ASS'Y

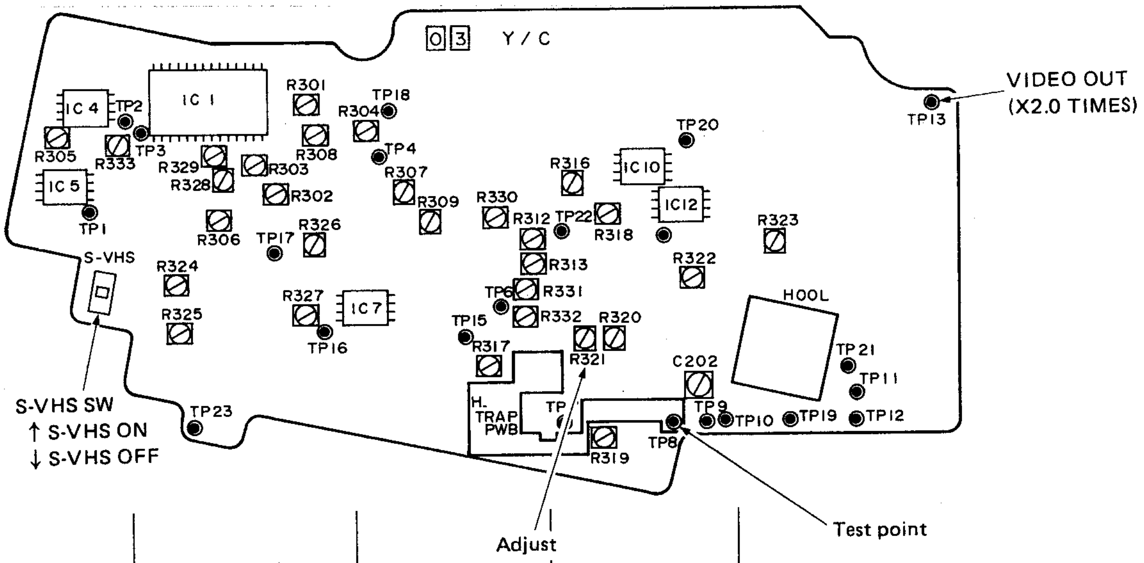
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
5	PB Color Level	• MH-C1H • PB mode • Color bars  Fig. 3-5-4	TP8 (PB COLOR)	R319 (PB COLOR LEVEL)	1) Observing the oscilloscope, adjust R319 to obtain 0.15 Vp-p at TP8 as the maximum signal level. 2) The adjustment of the step 1) should be performed for four channels of CH-1 through CH-4. At this time, confirm that the level difference between channels is within 4 dB.
6	VCO (3.579545 MHz)	• MH-C1 PB • PB mode • Color bars • TP21 (GND) and TP10 (VCO) short	TP9 (VCO OUT)	C202 (VCO)	1) Shortcircuit TP21 (GND) and TP10 of the Y/C board. 2) Connect the frequency counter to TP9, and adjust C202 so that frequency (f) becomes: 3.579545 MHz ± 50 Hz.


03 Y/C
VIDEO OUT
(X2.0 TIMES)
TP13
IC 4
TP2
IC 1
R301
TP18
R304
TP20
R305
R333
TP3
R329
R308
R303
TP4
R307
R316
IC10
R328
R302
IC 5
R309
R330
R312
TP22
IC12
TP1
R306
TP17
R326
R318
R323
S-VHS
R324
R313
R322
R327
IC7
TP6
R331
HOOL
R325
TP15
R332
R320
TP16
R317
R321
TP 21
C202
TP11
H. TRAP PWB
TP7
TP9
TP10
TP19
TP12
TP8
R319
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
TP23
GND
Adjust.
Test point


03 Y/C
VIDEO OUT
(X2.0 TIMES)
TP13
IC 4
TP2
IC 1
R301
TP18
R304
TP20
R305
R333
TP3
R329
R308
R303
TP4
R307
R316
IC10
R328
R302
IC 5
R309
R330
R312
TP22
IC12
TP1
R306
TP17
R326
R318
R323
Adjust.
S-VHS
R324
R313
R322
R327
IC7
TP6
R331
HOOL
R325
TP15
R332
R320
TP16
R317
R321
C202
TP 21
GND
TP11
H. TRAP PWB
TP7
TP9
TP10
TP19
TP12
TP8
R319
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
TP23
Test points

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
7	AFC	• MH-C1 • PB mode • Color bars • 2.5 V DC to TP5  2.2 K 2.2 K TP20 REG (5 V) TP19 (GND) TP7 (AFC)	TP14 (5.15 MHz)	R318 (AFC)	1) Supply regulated 2.5 V DC to TP20. (Otherwise 2.5 V DC can be obtained by the illustrated wiring to be connected to TP11 (REG), TP19 (GND) and TP7 (AFC) on the Y/C board. 2) Connect the frequency counter to TP14. 3) Adjust R318 so that frequency (f) at TP14 becomes as follows: f = 5.15 MHz ± 100 kHz.
 Adjust. Test points 03 Y/C VIDEO OUT (X2.0 TIMES) TP13 TP20 TP14 R318 TP7 TP19 S-VHS SW ↑ S-VHS ON ↓ S-VHS OFF Test point Test point					
8	S-VHS C S-mode REC Color Level	• S-VHS mode • S-VHS (MH-C1H) tape • Y/C separator • Color board • REC mode	TP8 (PB COLOR LEVEL)	R320 (SP REC COLOR LEVEL)	1) Set the S-VHS selector switch to ON and load an S-VHS cassette tape. 2) Set the deck for REC mode. 3) Connect the oscilloscope to TP8, and adjust R320 so that the larger level ("a" or "b" in the item 5 becomes 0.15 $^{+0.02}_{-0}$ V.
 03 Y/C VIDEO OUT (X2.0 TIMES) TP13 Adjust. (S-VHS mode) R320 TP8 S-VHS SW ↑ S-VHS ON ↓ S-VHS OFF Test point					

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
9	Normal mode REC Color Bar	• Normal mode • Normal tape • Y/C separator • Colro bars • REC then PB	TP8 (PB COLOR LEVEL)	R321 (EP REC COLOR LEVEL)	1) Set the S-VHS selector switch to OFF position for the normal REC mode. 2) Set the deck for the REC mode. 3) Connect the oscilloscope to TP8, and adjust R321 so that the larger level of "a" or "b" in the item 5 becomes 0.20–2.22 V.


03
Y / C
IC 4
TP2
IC 1
R301
TP18
R304
R305
R333
TP3
R329
R303
R308
TP4
R307
R328
R302
IC 5
TP1
R306
TP17
R326
R309
R330
R312
TP22
R316
IC10
IC12
R318
TP20
R323
R322
R313
TP6
R331
TP15
R332
R320
R317
R321
S-VHS
R324
R325
R327
IC7
TP16
HOOL
TP21
TP11
C202
TP9
TP10
TP19
TP12
TP13
VIDEO OUT
(X2.0 TIMES)
H. TRAP PWB
TP
R319
TP8
TP23
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
Adjust
Test point

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
10	PB Y Level	• Normal mode • MH-C1 • Y/C separator • Color bars • REC then PB	VIDEO OUT	R309 (PB Y LEVEL)	1) Terminate the VIDEO OUT with a 75-ohm resistor, and adjust R309 so that Y level becomes 1.0 Vp-p at the terminated VIDEO OUT terminal.

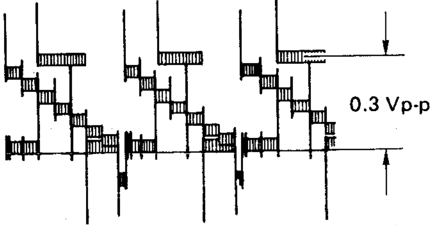


Fig. 3-5-5

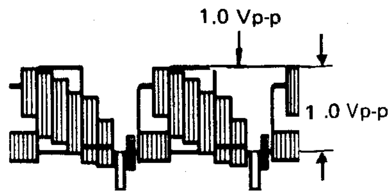
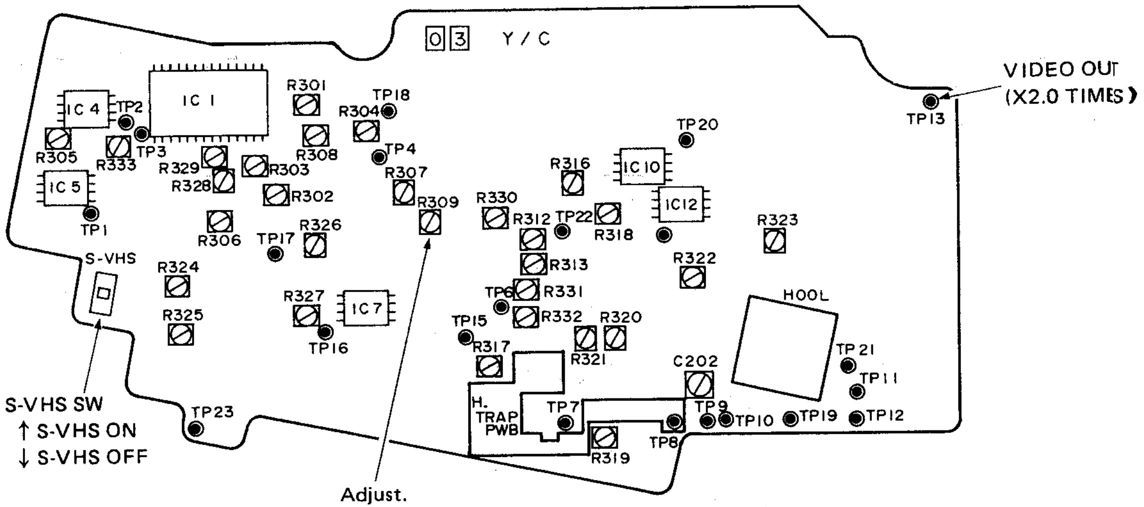
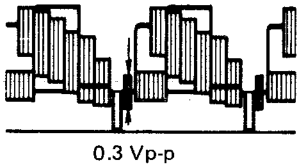
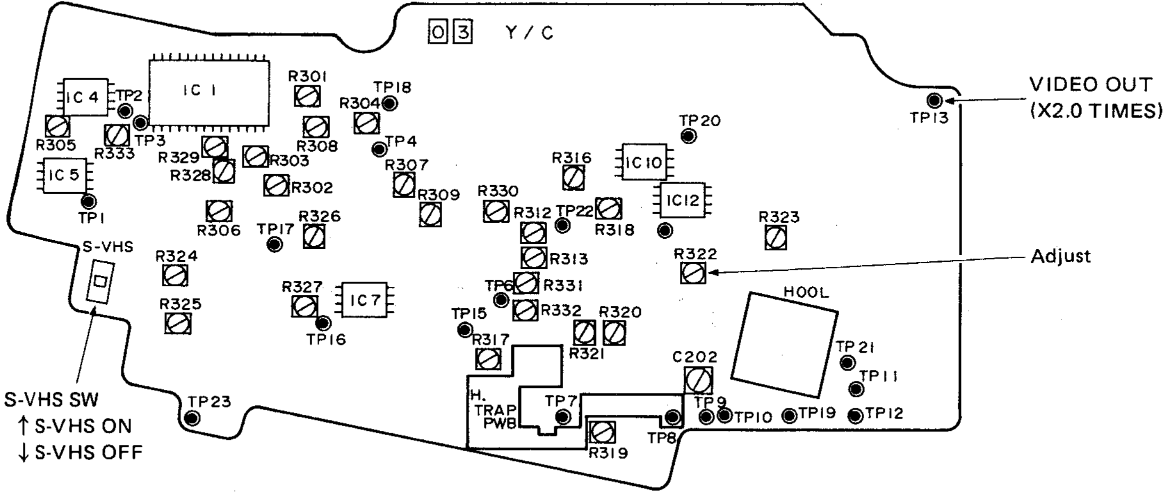
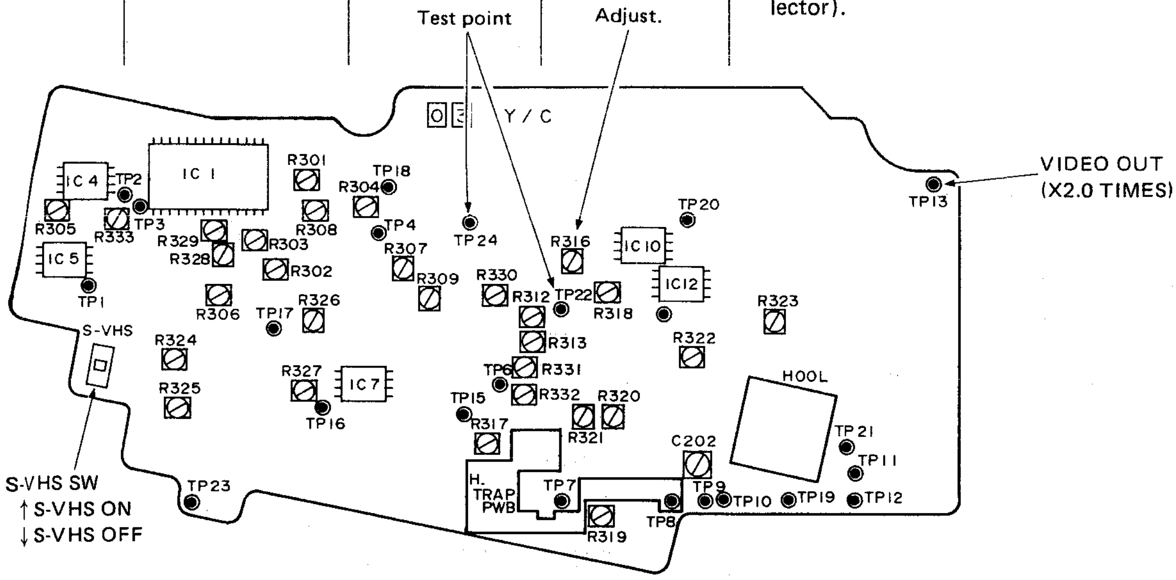

1.0 Vp-p
1 .0 Vp-p

Fig. 3-5-6


03
Y / C
IC 4
TP2
IC 1
R301
TP18
R304
R305
R333
TP3
R329
R303
R308
TP4
R307
R328
R302
IC 5
TP1
R306
TP17
R326
R309
R330
R312
TP22
R316
IC10
IC12
R318
TP20
R323
R322
R313
TP6
R331
TP15
R332
R320
R317
R321
S-VHS
R324
R325
R327
IC7
TP16
HOOL
TP21
TP11
C202
TP9
TP10
TP19
TP12
TP13
VIDEO OUT
(X2.0 TIMES)
H. TRAP PWB
TP7
R319
TP8
TP23
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
Adjust.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
11	PB Burst Level	• Normal mode • MH-C1 • Y/C separator • Color bars • REC then PB	VIDEO OUT	R322 (PB BURST LEVEL)	1) Terminate the VIDEO OUT with a 75-ohm resistor and adjust R322 to obtain 0.3 Vp-p for burst level at the terminated VIDEO OUT.  0.3 Vp-p Fig. 3-5-7
12	Delay Level	• Normal mode • Normal tape • Y/C separator • Color bars • REC then PB	TP24 or Q9 collector TP22 (DOC LEVEL)	R316 (1H DELAY Y)	1) Connect the oscilloscope to TP24 (or Q9's collector) to read the signal level. 2) Change the oscilloscope connection to TP22 and adjust R316 so that the signal level becomes the same as that at TP24 (or Q9's collector).


03 Y/C
IC 1
IC 4
IC 5
IC 7
IC 10
IC12
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
R301
R302
R303
R304
R305
R306
R307
R308
R309
R312
R313
R316
R317
R318
R319
R320
R321
R322
R323
R324
R325
R326
R327
R328
R329
R330
R331
R332
R333
C202
HOOL
H. TRAP PWB
S-VHS
S-VHS SW
↑S-VHS ON
↓S-VHS OFF
VIDEO OUT (X2.0 TIMES)
Adjust


Test point
Adjust.
03 Y/C
IC 1
IC 4
IC 5
IC 7
IC 10
IC12
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
TP 24
R301
R302
R303
R304
R305
R306
R307
R308
R309
R312
R313
R316
R317
R318
R319
R320
R321
R322
R323
R324
R325
R326
R327
R328
R329
R330
R331
R332
R333
C202
HOOL
H. TRAP PWB
S-VHS
S-VHS SW
↑S-VHS ON
↓S-VHS OFF
VIDEO OUT (X2.0 TIMES)

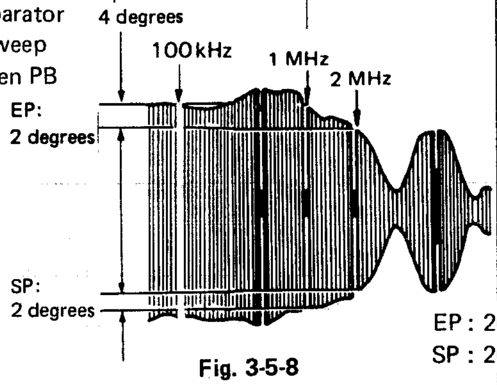
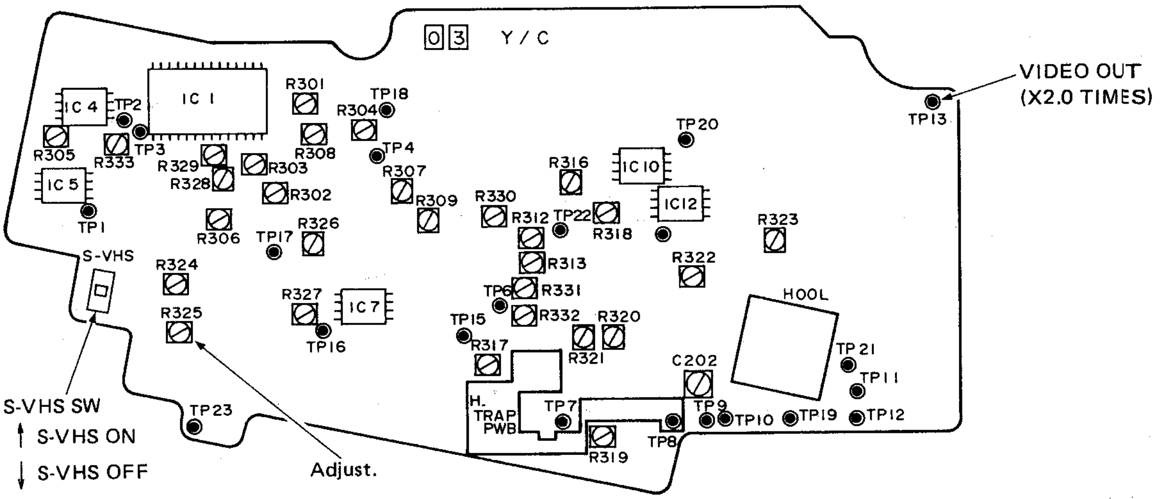
<table>
<tr><th>No.</th><th>Item</th><th>Signal & Mode</th><th>Check Point</th><th>Adjustment Parts</th><th>Description</th></tr>
<tr><td rowspan="2">13</td><td>Video EQ</td><td>• Normal mode
• Normal tape
• Y/C separator
• Color sweep
• REC then PB</td><td>VIDEO OUT


Fig. 3-5-8</td><td>R325 (SP FREQ RESPONSE)</td><td>1) Set the S-VHS switch OFF for the VHS mode.
2) Insert an VHS-C cassette and set for SP Recording.
3) Connect oscilloscope to VIDEO OUT. When the Stop/start signal (100 Hz) is at 4 scale divisions, adjust R234 to set 2 MHz to 2.8 scale divisions.
4) Change to EP mode Recording and confirm that 2 MHz is 1.8 scale divisions ± 0.5 scale division.
EP : 20 log 2/4 ≒ –6 dB
SP : 20 log 2/4 ≒ –6 dB</td></tr>
<tr><td colspan="5">

03 Y/C
IC 1
IC 4
IC 5
IC 7
IC 10
IC12
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
R301
R302
R303
R304
R305
R306
R307
R308
R309
R312
R313
R316
R317
R318
R319
R320
R321
R322
R323
R324
R325
R326
R327
R328
R329
R330
R331
R332
R333
C202
HOOL
H. TRAP PWB
S-VHS
VIDEO OUT (X2.0 TIMES)
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
Adjust.

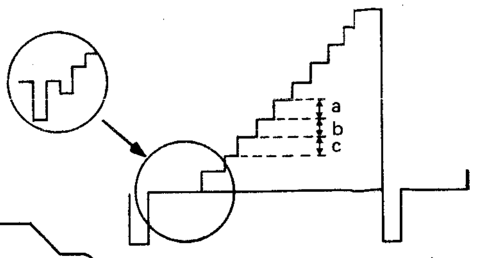
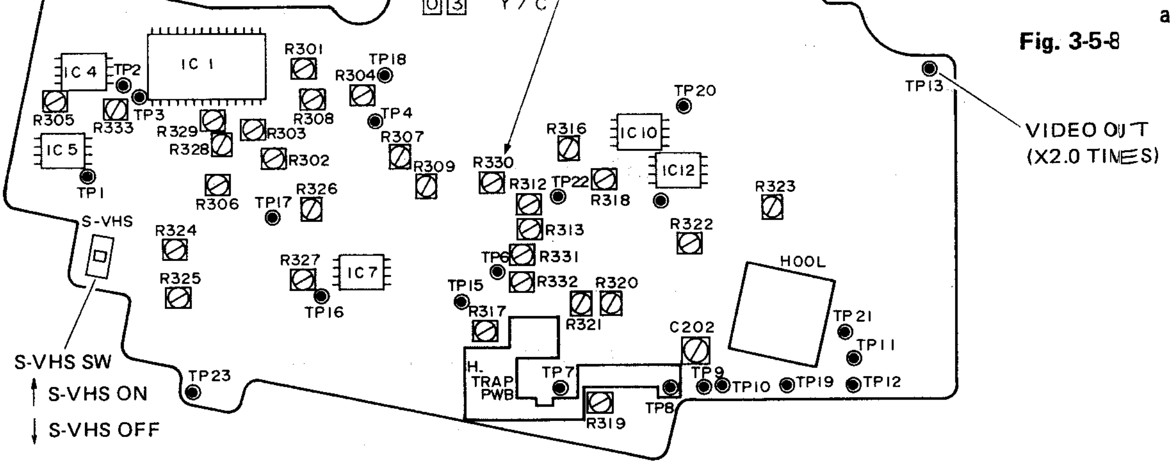
</td></tr>
<tr><td rowspan="2">14</td><td>Normal mode Limiter Adj.</td><td>• Normal mode
• Normal tape
• Y/C separator
• Stairstep
• REC then PB</td><td>VIDEO OUT</td><td>R330 (COLOR LIM)</td><td>1) Pick up the grey scale in the SP modee, and adjust R330 so that the video output level for every step is the same in the period (namely, a = b = c in the figure).


Fig. 3-5-8</td></tr>
<tr><td colspan="5">

Adjust.
03 Y/C
IC 1
IC 4
IC 5
IC 7
IC 10
IC12
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
R301
R302
R303
R304
R305
R306
R307
R308
R309
R312
R313
R316
R317
R318
R319
R320
R321
R322
R323
R324
R325
R326
R327
R328
R329
R330
R331
R332
R333
C202
HOOL
H. TRAP PWB
S-VHS
VIDEO OUT (X2.0 TIMES)
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF

</td></tr>
</table>

<table>
<tr><th>No.</th><th>Item</th><th>Signal & Mode</th><th>Check Point</th><th>Adjustment Parts</th><th>Description</th></tr>
<tr><td>15</td><td>S-VHS-C
E-E Y Level</td><td>• S-VHS mode
• S-VHS tape
• Y/C separator
• Color bars
• E-E mode</td><td>VIDEO OUT</td><td>R305 (E-E Y LEVEL)
R323 (BURST LEVEL</td><td>1) Set the S-VHS selector switch to the ON position, and load an S-VHS cassette tape.
2) Terminate the VIDEO OUT with a 75-ohm resistor, and adjust R305 to obgain 1.0 Vp-p for Y level at the terminated VIDEO OUT.
3) Adjust R323 to obtain 0.3 V of burst level.

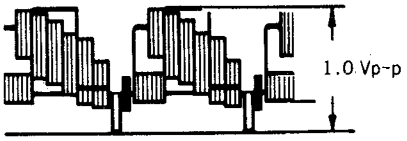
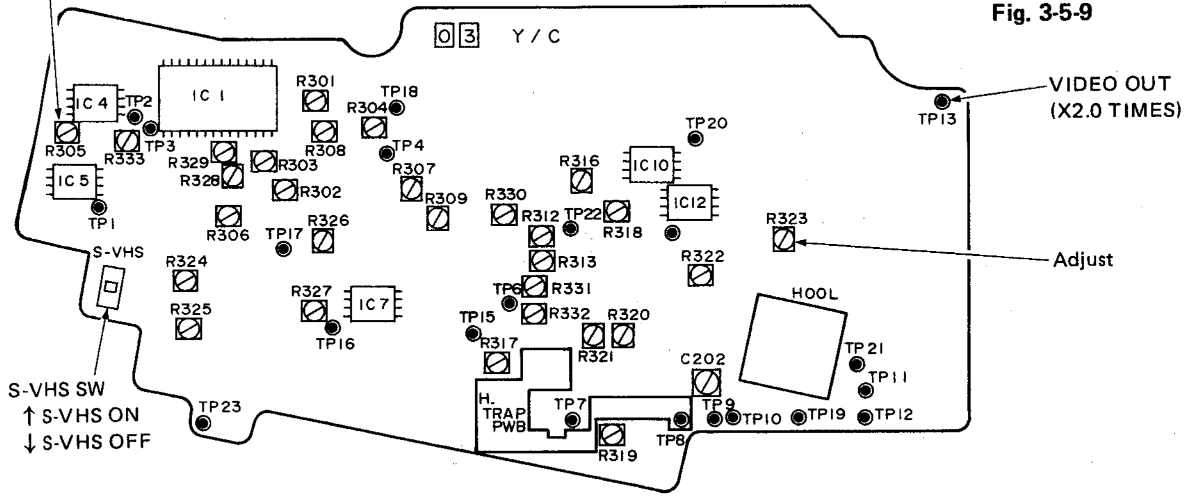
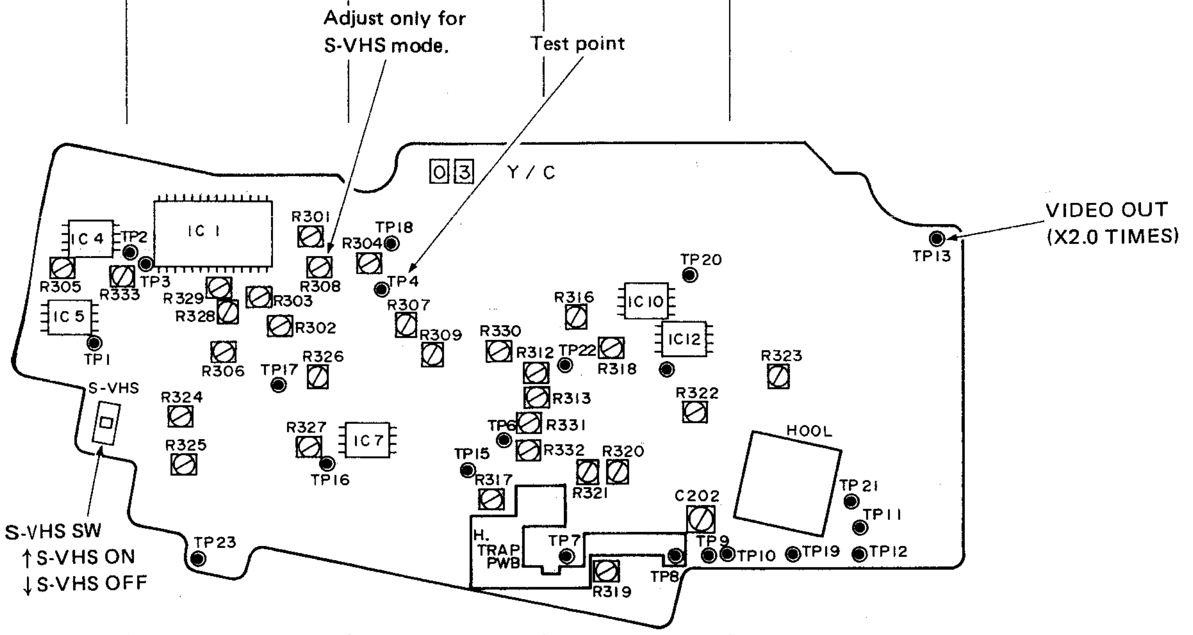



Fig. 3-5-9</td></tr>
<tr><td colspan="6">Adjust only for S-VHS mode.


03 Y/C
IC 4
TP2
IC 1
R301
TP18
R304
R305
R333
TP3
R329
R328
R303
R308
TP4
R307
R302
IC 5
TP1
R306
TP17
R326
R309
R330
R312
TP22
R316
IC10
IC12
TP20
R318
S-VHS
R324
R325
R327
IC7
TP16
R313
TP6
R331
R332
R320
TP15
R317
R321
R322
R323
Adjust
HOOL
C202
TP21
TP11
H. TRAP PWB
TP7
R319
TP8
TP9
TP10
TP19
TP12
TP23
TP13
VIDEO OUT (X2.0 TIMES)
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF

</td></tr>
<tr><td>16</td><td>S-VHS-C
Sub Emphasis Limiter Balance</td><td>• S-VHS mode
• S-VHS tape
• Y/C separator
• Color bars
• E-E mode</td><td>TP4 (LIM BALANCE)</td><td>R308 (EMPHA LIM BAL)</td><td>1) Set the S-VHS selector switch to the ON position, and load an S-VHS cassette tape.
2) Connect the oscilloscope to TP4 and adjust R308 so that signal level at TP4 becomes 3.48 V in the state of no signal input.</td></tr>
<tr><td colspan="6">

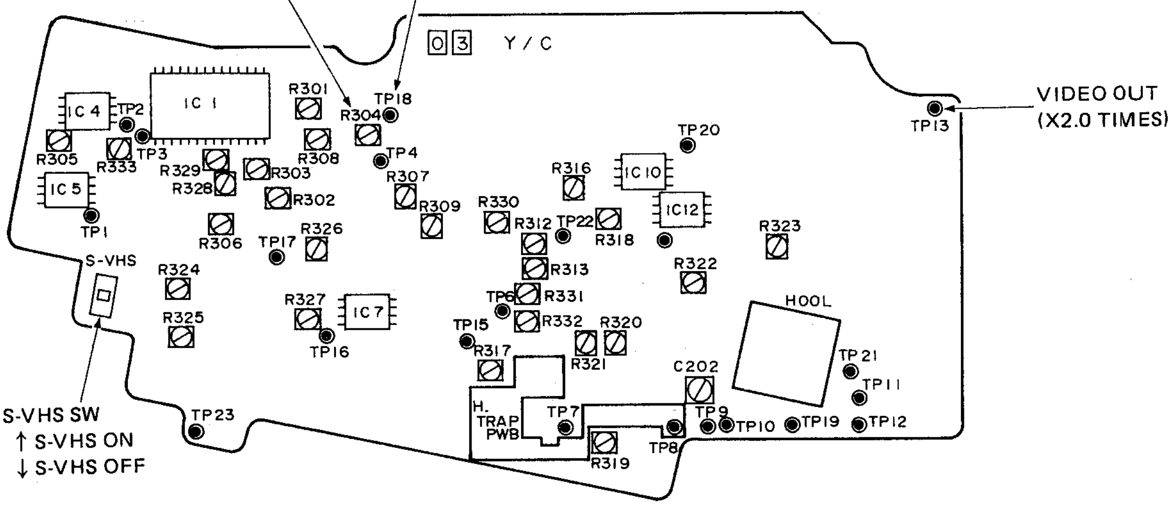
Adjust only for S-VHS mode.
Test point
03 Y/C
IC 4
TP2
IC 1
R301
TP18
R304
R305
R333
TP3
R329
R328
R303
R308
TP4
R307
R302
IC 5
TP1
R306
TP17
R326
R309
R330
R312
TP22
R316
IC10
IC12
TP20
R318
S-VHS
R324
R325
R327
IC7
TP16
R313
TP6
R331
R332
R320
TP15
R317
R321
R322
R323
HOOL
C202
TP21
TP11
H. TRAP PWB
TP7
R319
TP8
TP9
TP10
TP19
TP12
TP23
TP13
VIDEO OUT (X2.0 TIMES)
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF

</td></tr>
</table>

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
17	SVHSC Sub Emphasis Input Level	• S-VHS mode • S-VHS tape • Y/C separator • Color bars • E-E mode	TP18 (EMPHA IN PUT)	R304 (SUB EMPHASIS IN LEVEL)	1) Set the S-VHS selector switch to the ON position, and load an S-VHS cassette tape. 2) Connect the oscilloscope to TP18 and adjust R304 to obtain 0.4 V for input level at TP18.

Adjust only for S-VHS mode.

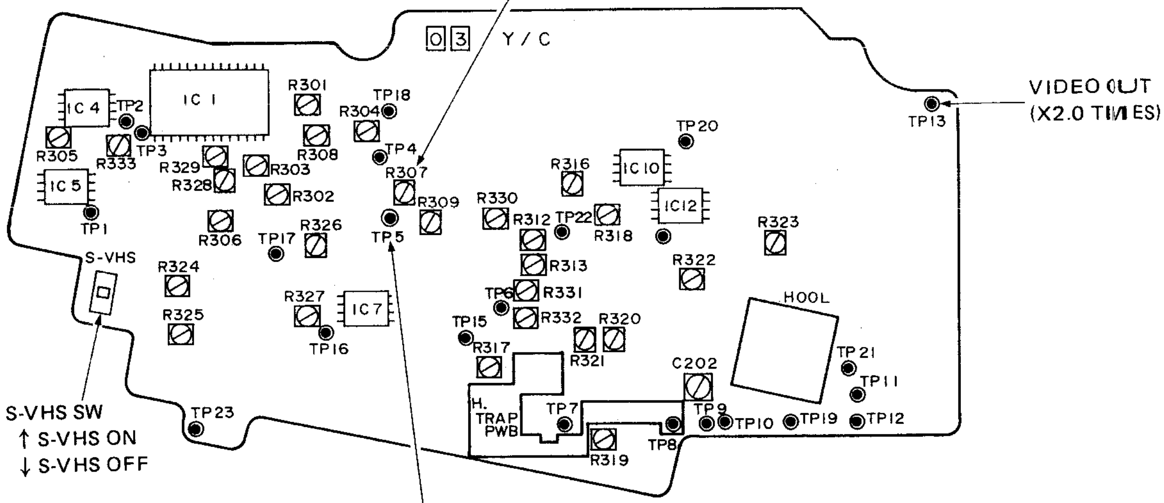
Test point



03 Y / C
IC 4
TP2
IC 1
R301
R304
TP18
TP20
TP13
VIDEO OUT
(X2.0 TIMES)
R305
R333
TP3
R329
R303
R308
TP4
R307
R316
IC 10
R328
R302
R309
R330
IC12
IC 5
TP1
R306
TP17
R326
R312
TP22
R318
R323
S-VHS
R324
R313
R322
R327
IC 7
TP6
R331
HOOL
R325
TP16
TP15
R332
R320
R317
R321
C202
TP 21
TP11
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
TP23
H. TRAP PWB
TP7
TP9
TP10
TP19
TP12
R319
TP8

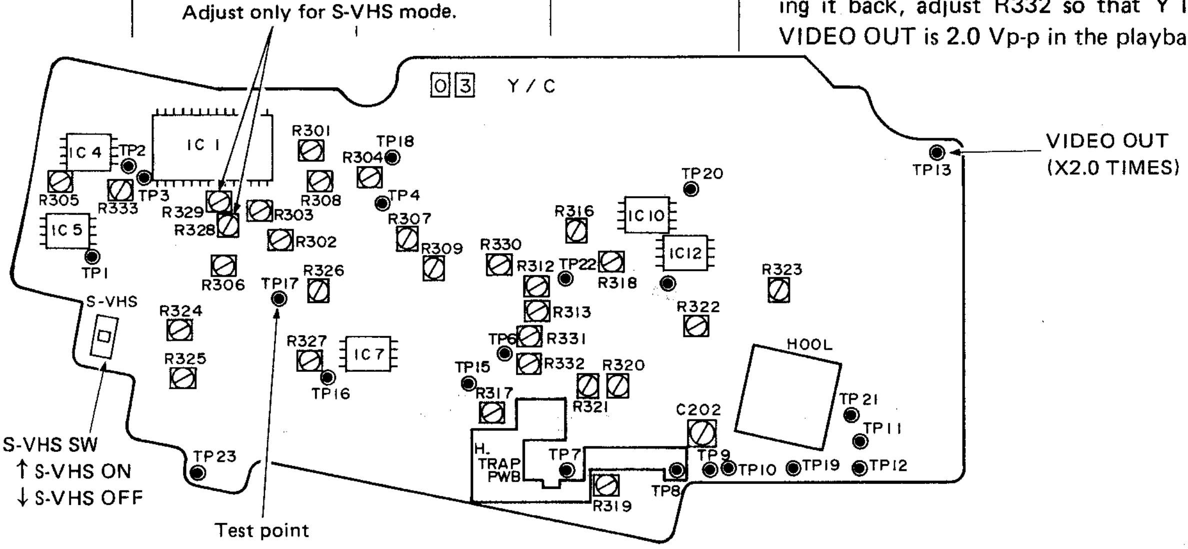
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
18	SVHSC Sub Emphasis Output Level	• S-VHS mode • S-VHS tape • Y/C separator • Color bars • E-E mode	TP5 (EMPHASIS)	R307 (SUB EMPHASIS OUT LEVEL)	1) With the S-VHS selector switch set to ON, load an S-VHS cassette tape. 2) Connect the oscilloscope to TP5, and adjust R307 to obtain 1.1 Vp-p of output level at TP5.

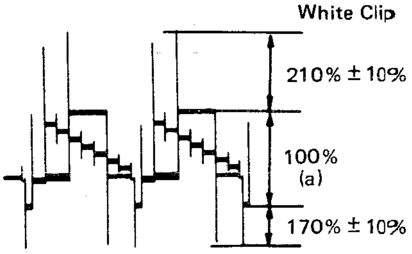
Adjust only for S-VHS mode.



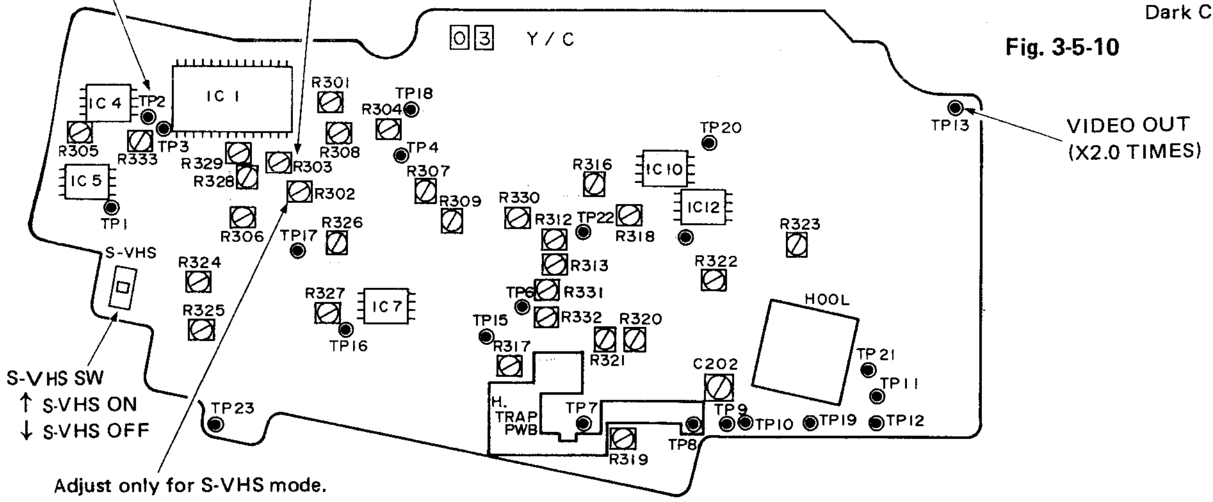
03 Y / C
IC 4
TP2
IC 1
R301
R304
TP18
TP20
TP13
VIDEO OUT
(X2.0 TIMES)
R305
R333
TP3
R329
R303
R308
TP4
R307
R316
IC 10
R328
R302
R309
R330
IC12
IC 5
TP1
R306
TP17
R326
TP5
R312
TP22
R318
R323
S-VHS
R324
R313
R322
R327
IC 7
TP6
R331
HOOL
R325
TP16
TP15
R332
R320
R317
R321
C202
TP 21
TP11
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
TP23
H. TRAP PWB
TP7
TP9
TP10
TP19
TP12
R319
TP8

Test point

<table>
<tr><th>No.</th><th>Item</th><th>Signal & Mode</th><th>Check Point</th><th>Adjustment Parts</th><th>Description</th></tr>
<tr><td>19</td><td>S-VHS C
Carrier Deviation</td><td>• S-VHS mode
• S-VHS tape
• Y/C separator
• Color bars</td><td>TP17 (S. REC FM)
IC1 pin 23
VIDEO OUT</td><td>R304 (SUB EMPHASIS IN LEVEL)
R332 (DEVIATION)</td><td>1) Connect the frequency counter to TP17.
2) In recording without input signal adjust R304 so that the frequency counter reads 5.4 MHz ± 50 Hz.
3) Connect the oscilloscope to pin 23 of IC1, and adjust R332 so that signal level between white clip and dark clip becomes 32 mV.
4) In recording the color bars pattern and playing it back, adjust R332 so that Y level at VIDEO OUT is 2.0 Vp-p in the playback.</td></tr>
<tr><td></td><td colspan="5">
Adjust only for S-VHS mode.
03 Y/C
IC1
IC4
IC5
IC7
IC10
IC12
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
R301
R302
R303
R304
R305
R306
R307
R308
R309
R313
R316
R317
R318
R319
R320
R321
R322
R323
R324
R325
R326
R327
R328
R329
R330
R331
R332
R333
C202
HOOL
H. TRAP PWB
S-VHS
VIDEO OUT
(X2.0 TIMES)
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
Test point

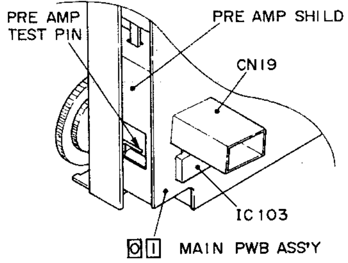
</td></tr>
<tr><td>20</td><td>S-VHS C
White & Dark Clip</td><td>• S-VHS mode
• S-VHS tape
• Y/C separator
• Color bars
• EE mode</td><td>TP2 (EMPHASIS)</td><td>R303 (DARK CLIP)
R302 (WHITE CLIP)</td><td>1) With the oscilloscope connected to TP2, adjust R303 and R302 so that white clip becomes 210% ± 10% and dark clip becomes 170% ± 10%, respectively.


White Clip
210% ± 10%
100% (a)
170% ± 10%
Dark Clip

Fig. 3-5-10</td></tr>
<tr><td></td><td colspan="5">
Test point mode
Adjust only for S-VHS mode.
03 Y/C
IC1
IC4
IC5
IC7
IC10
IC12
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
R301
R302
R303
R304
R305
R306
R307
R308
R309
R313
R316
R317
R318
R319
R320
R321
R322
R323
R324
R325
R326
R327
R328
R329
R330
R331
R332
R333
C202
HOOL
H. TRAP PWB
S-VHS
VIDEO OUT
(X2.0 TIMES)
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
Adjust only for S-VHS mode.

</td></tr>
</table>

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
21	**S-VHS C** REC FM Level	• S-VHS mode • S-VHS tape • Y/C separater • Color bars • REC mode	Test pin of pre-amplifier [PRE AMP] (Can be measured from the outside of the shield.)	R326 (REC FM LEVEL)	1) Connect the oscilloscope's probe to the test pin of the preamp. 2) Adjust R326, then play back the color bars so that the signal level becomes 3.0 Vp-p at where the waveform comes to pedestal level.


PRE AMP TEST PIN
PRE AMP SHILD
CN19
IC 103
01 MAIN PWB ASS'Y

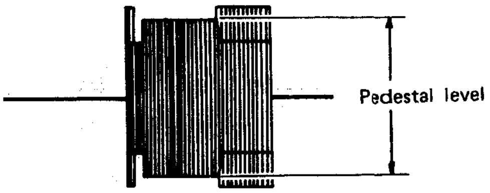
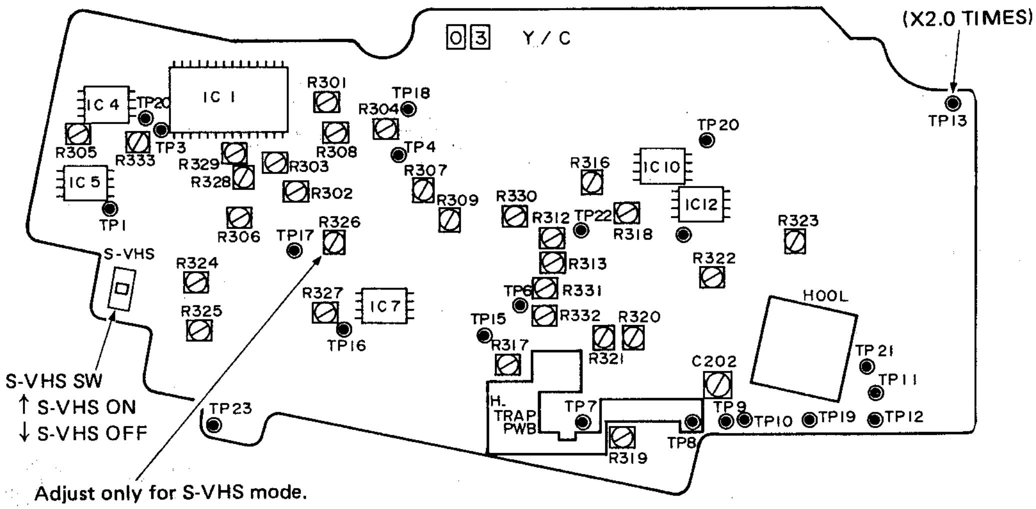
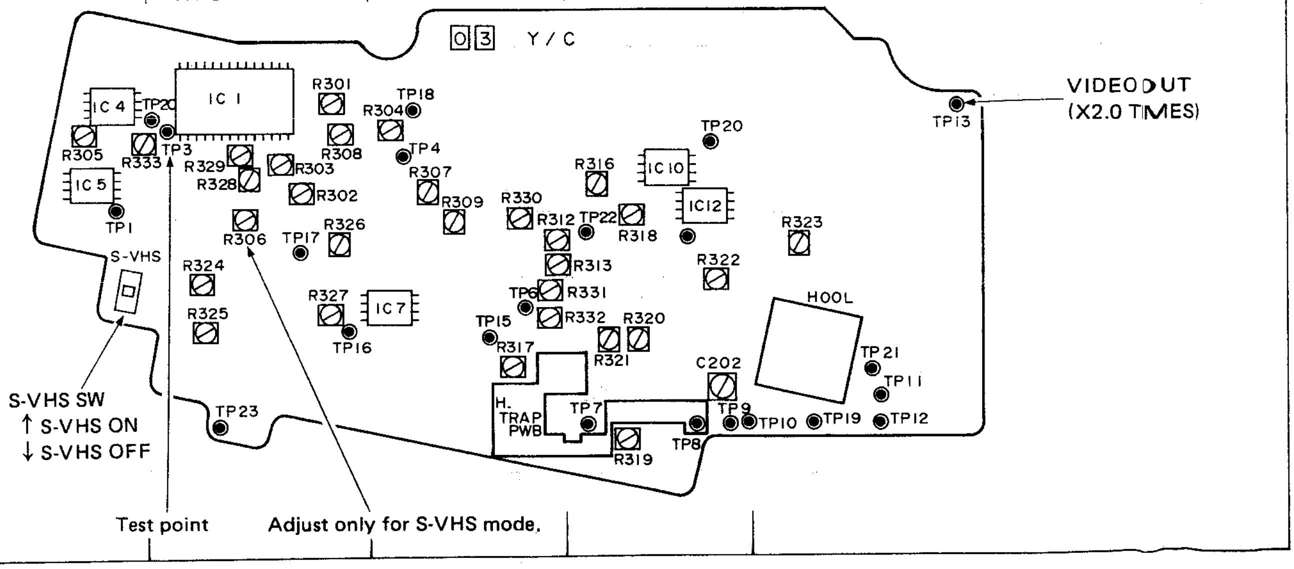

Pedestal level

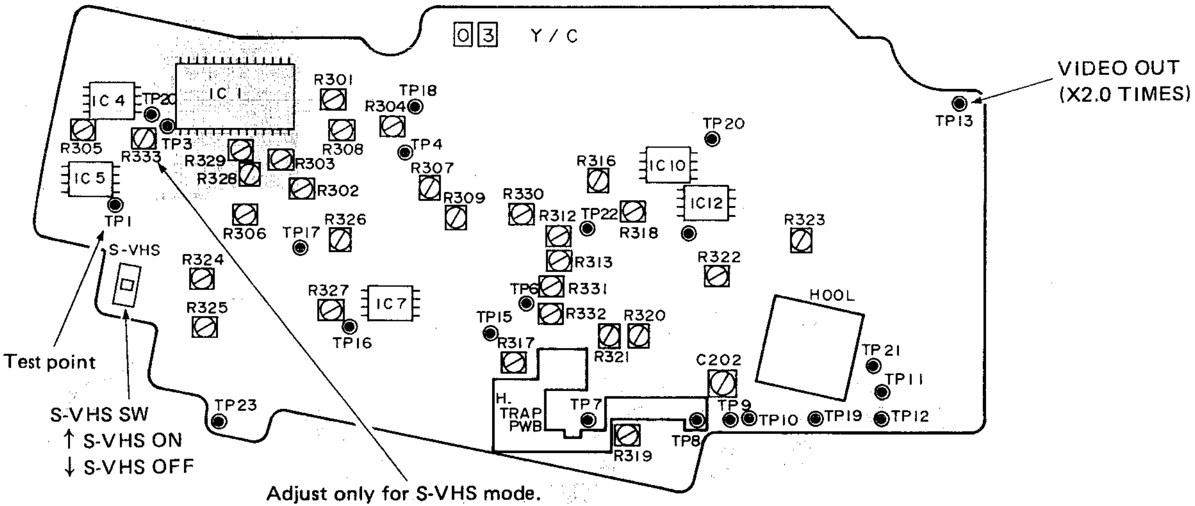
Fig. 3-5-11


03 Y/C
VIDEO OUT (X2.0 TIMES)
TP13
IC 4
TP20
IC 1
R301
TP18
R304
R305
R333
TP3
R329
R303
R308
TP4
R307
R316
IC 10
TP20
IC 5
R328
R302
R309
R330
IC12
R323
TP1
R306
TP17
R326
R312
TP22
R318
S-VHS
R324
R313
R322
R327
IC 7
TP6
R331
HOOL
R325
TP16
TP15
R332
R320
R317
R321
TP21
C202
TP11
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
TP23
H. TRAP PWB
TP7
TP9
TP10
TP19
TP12
R319
TP8
Adjust only for S-VHS mode.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
22	**S-VHS C** PB DEM. Level	• S-VHS mode • S-VHS tape • Y/C separater • Color bars • REC then PB	TP3 (PB DEM)	R306 (PB DEM LEVEL)	1) Connect the oscilloscope to TP3. 2) Adjust R306 so that signal level becomes 0.03 V.


03 Y/C
VIDEO OUT (X2.0 TIMES)
TP13
IC 4
TP20
IC 1
R301
TP18
R304
R305
R333
TP3
R329
R303
R308
TP4
R307
R316
IC 10
TP20
IC 5
R328
R302
R309
R330
IC12
R323
TP1
R306
TP17
R326
R312
TP22
R318
S-VHS
R324
R313
R322
R327
IC 7
TP6
R331
HOOL
R325
TP16
TP15
R332
R320
R317
R321
TP21
C202
TP11
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
TP23
H. TRAP PWB
TP7
TP9
TP10
TP19
TP12
R319
TP8
Test point
Adjust only for S-VHS mode.

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
23	SVHS C 12 dB Amp. Output Level	• Normal mode • Normal tape • Y/C separater • Color bars • REC then PB	TP1 (12 dB OUT)	R333 (12 dB ADJ)	1) Connect the oscilloscope to TP1. 2) Adjust R333 so that signal level becomes 1.0 V.
24	SVHS C PB Y Level	• S-VHS mode • MH-C1H • Y/C separator • Color bars • PB	VIDEO OUT	R301 (PB Y LEVEL)	1) Connect the oscilloscope to the VIDEO OUT terminal. 2) Adjust R301 so that signal level becomes 1.0 Vp-p.



03 Y/C
IC 4
TP20
IC 1
R301
TP18
R304
R305
R333
TP3
R329
R328
R303
R308
TP4
R307
R302
IC 5
TP1
S-VHS
R306
TP17
R326
R309
R330
R312
TP22
R316
IC10
IC12
TP20
R318
R313
R322
R323
R324
R325
R327
IC7
TP16
TP6
R331
TP15
R332
R320
R317
R321
HOOL
C202
TP21
TP11
TP23
H. TRAP PWB
TP7
TP9
TP10
TP19
TP12
R319
TP8
TP13

VIDEO OUT (X2.0 TIMES)

Test point

S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF

Adjust only for S-VHS mode.

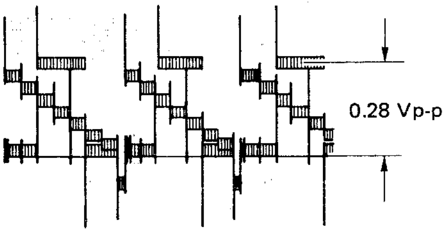


Fig. 3-5-12

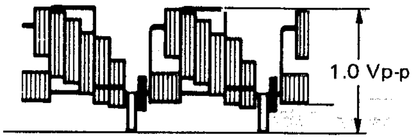
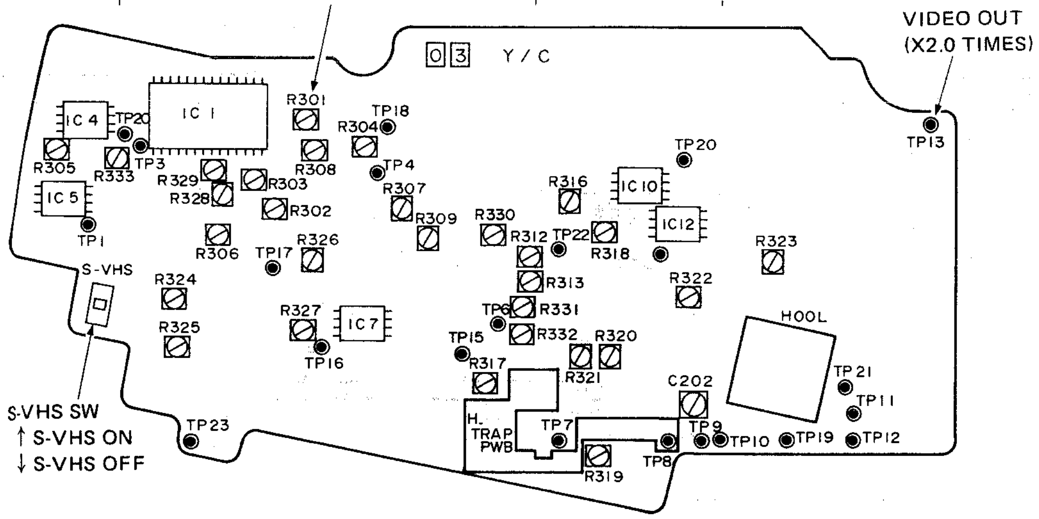


Fig. 3-5-13

Adjust only for S-VHS mode.

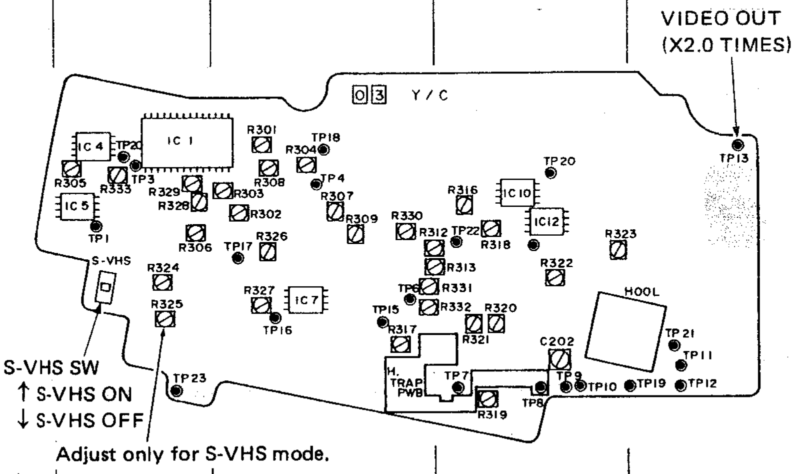


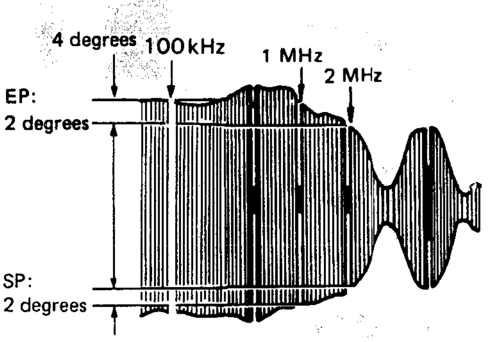
03 Y/C
IC 4
TP20
IC 1
R301
TP18
R304
R305
R333
TP3
R329
R328
R303
R308
TP4
R307
R302
IC 5
TP1
S-VHS
R306
TP17
R326
R309
R330
R312
TP22
R316
IC10
IC12
TP20
R318
R313
R322
R323
R324
R325
R327
IC7
TP16
TP6
R331
TP15
R332
R320
R317
R321
HOOL
C202
TP21
TP11
TP23
H. TRAP PWB
TP7
TP9
TP10
TP19
TP12
R319
TP8
TP13

VIDEO OUT (X2.0 TIMES)

S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
25	**S-VHS-C** Video EQ	• S-VHS mode • S-VHS tape • Y/C separater • Color bars • REC then PB	VIDEO OUT	R324 (SP FREQ RESPONSE)	1) Set the S-VHS siwtch ON for the S-VHS mode. 2) Insert an S-VHS-C cassette and set for SP Recording. 3) Connect oscilloscope to VIDEO OUT. When the Stop–start signal (100 Hz) is at 4 scale divisions, adjust R234 to set 3.58 MHz to 3 scale divisions. 4) Change to EP mode Recording and confirm that 3.58 MHz is 2 scale divisions ± 0.5 scale division.


VIDEO OUT
(X2.0 TIMES)
03 Y/C
IC 4
TP20
IC 1
R301
TP18
R304
R305
R333
TP3
R329
R328
R303
R308
TP4
R307
IC 5
TP1
R302
R309
R330
R316
IC 10
TP20
TP13
R312
TP22
R318
IC12
R323
R306
TP17
R326
S-VHS
R324
R313
R322
R327
IC 7
TP6
R331
TP15
R332
R320
R325
TP16
R317
R321
HOOL
C202
TP 21
TP11
H. TRAP PWB
TP7
TP9
TP10
TP19
TP12
TP8
R319
TP23
S-VHS SW
↑ S-VHS ON
↓ S-VHS OFF
Adjust only for S-VHS mode.


4 degrees
100kHz
1 MHz
2 MHz
EP:
2 degrees
SP:
2 degrees

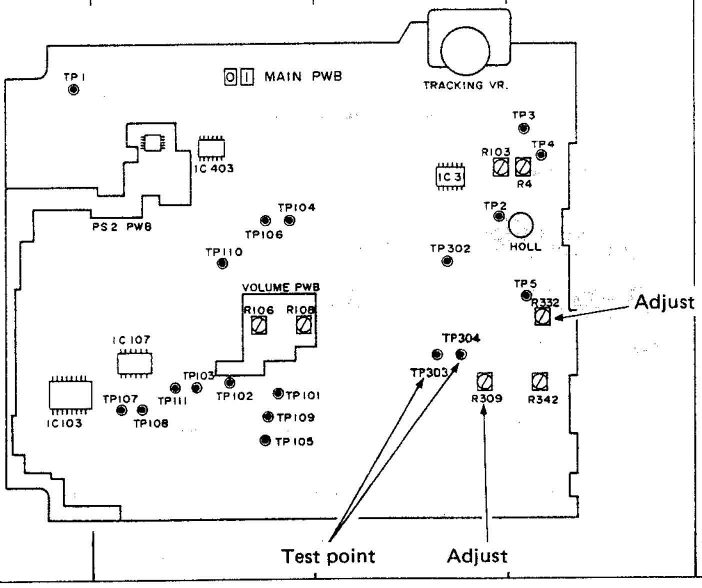
EP : 20 log 2/4 ≒ −6 dB
SP : 20 log 2/4 ≒ −6 dB

Fig. 3-5-14

3.6 AUDIO CIRCUIT (01 MAIN board)

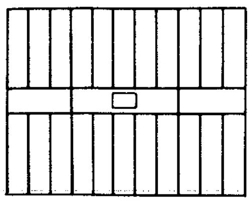
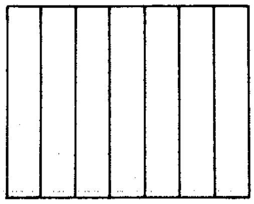
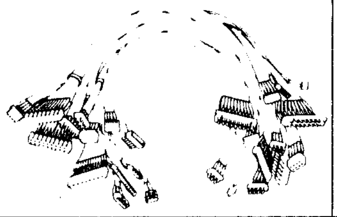
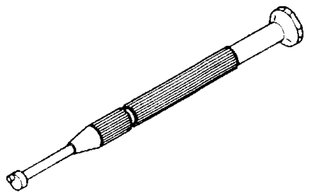
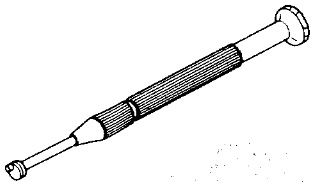
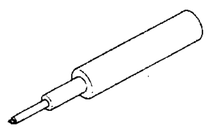
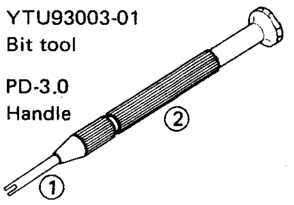
Note: Unless otherwise specified, all test points and adjustments are located on the MAIN board.

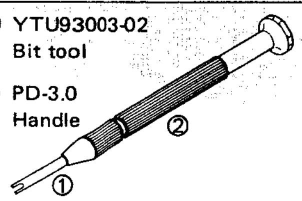
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	PB Level	• MH-C1 (1 kHz) • PB • LINE OUT	LINE OUT 01 MAIN	R309 (AUDIO PB LEVEL) 01 MAIN	1) Play back the alignment tape MH-C1 (1 kHz segment) and adjust R309 so that signal level at LINE OUT becomes −6 dBs ± 0.5 dBs.
2	Audio Bias Level	• REC • No audio signal input	TP304 (BIAS LEVEL-2) TP303 (BIAS LEVEL-1)	R342 (AUDIO BIAS LEVEL) 01 MAIN	1) Connect an audio tester's HOT side to TP303 and GND to TP304, respectively. 2) Adjust R342 so that bias level between TP303 and TP304 becomes 2.0 mV rms.


TP1
01 MAIN PWB
TRACKING VR.
TP3
TP4
R103
R4
IC 403
IC 3
TP104
TP2
PS2 PWB
TP106
HOLL
TP110
TP302
VOLUME PWB
TP5
R332
Adjust
R106
R108
IC 107
TP304
TP303
TP103
R309
R342
TP107
TP111
TP102
TP101
IC103
TP108
TP109
TP105
Test point
Adjust

3.7 ADJUSTMENTS OF CAMERA SECTION

3.7.1 Required tools and test equipment for camera adjustments

Grey scale pattern (GS-2A) Reflection type, 11 steps, $\gamma = 2.2$	Color bars pattern (CC-2A) Reflection type, 7-color	Patching cord YTU93001B	Back focus adjustment handle PUJ37186A
			
Auto focus unit Back focus adjustment handle PUJ37186B	Auto focus unit Back focus adjustment chart PUJ93944	Adjustment jig for compact VTR YTU93004	Chip parts replacement jig ass'y YTU93003A
			① YTU93003-01 Bit tool ② PD-3.0 Handle 

Chip parts replacement jig ass'y YTU93003B
① YTU93003-02 Bit tool ② PD-3.0 Handle 

3.7.2 Other tools and instruments necessary for adjustments

- Halogen lamps (3 200 K each) . . . . 2 or more
- Color temperature conversion filters

	KENKO	KODAK WRATTEN
Cold	C8	80C
	C8 + CC10Y	80C + CC10Y
	C12	82C + 82C + 82B
	C14	80A + 82
	C16	80A + 82B
	C24	80A + 80B
Warm	W4	81D
	W14	85B + 81

- ND filter
- 9.6 V DC supply (AA-V5U or equivalent)
- Skin tone test pattern (of clear color phase)
- A/V output cable

3.7.3 Measuring instruments necessary for adjustments

- Oscilloscope
- Vectorscope
- Color video monitor
- DC power supply
- Digital voltmeter
- Lux meter
- Color temperature meter

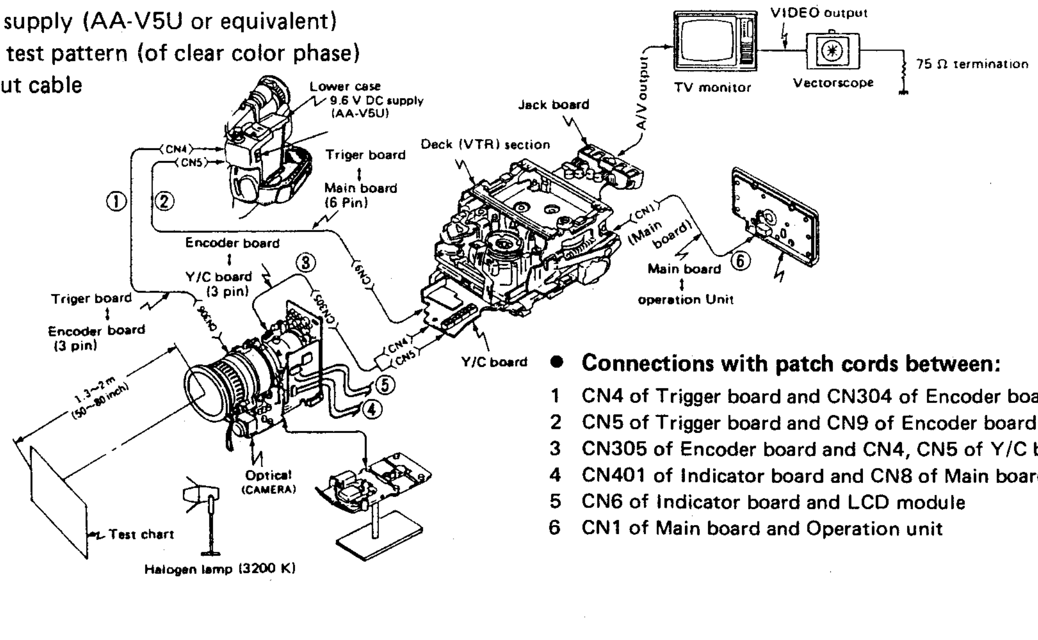
3.7.4 Standard setting and connection for adjustments and operation of the camera section

As the standard, separate the camera and deck sections each other and connect them with patch cords (see the figure below).

For the connection, connect the DC cord to the DC IN terminal of the lower case and connect patch cords to the connectors CN4 and CN5 of the trigger board inside the lower case. With these connections, supply 9.6 V DC to the MAIN and ENCODER boards to operate the camera section.

For a mode selection, perform it by the operation unit.

After the setting-up finishes, press the REHEARSAL button of the operation unit to confirm image on the monitor.


VIDEO output
TV monitor
Vectorscope
75 Ω termination
A/V output
Lower case
9.6 V DC supply (AA-V5U)
Jack board
CN4
CN5
Triger board ↕ Main board (6 Pin)
Deck (VTR) section
①
②
CN1 (Main board)
Encoder board ↕ Y/C board (3 pin)
③
CN9
Triger board ↕ Encoder board (3 pin)
CN304
CN305
Main board ↕ operation Unit
⑥
CN4
CN5
Y/C board
⑤
④
1.3~2 m (50~80 inch)
Optical (CAMERA)
Test chart
Halogen lamp (3200 K)

- **Connections with patch cords between:**

1 CN4 of Trigger board and CN304 of Encoder board (to supply 9.6 V DC)
2 CN5 of Trigger board and CN9 of Encoder board (to supply 9.6 V DC)
3 CN305 of Encoder board and CN4, CN5 of Y/C board (for Y/C output)
4 CN401 of Indicator board and CN8 of Main board (flat cable)
5 CN6 of Indicator board and LCD module
6 CN1 of Main board and Operation unit

3.7.5 Preparation and preliminary checks before adjustments

- **Precautions**

Electrical adjustments described in this section are generally required after replacing electrical parts.

In the event of malfunction with electrical circuits, troubleshooting with the aid of proper test instruments must be done first, and then, commence necessary repair, replacement, and adjustment, etc.

Since there are some troubles and symptoms which need not be adjusted, avoid unnecessary disturbance of the control settings and other items than the objects.

- **Preparation and preliminary check**

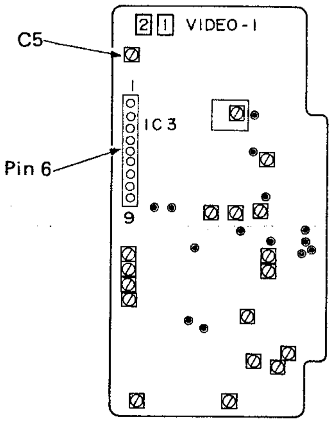
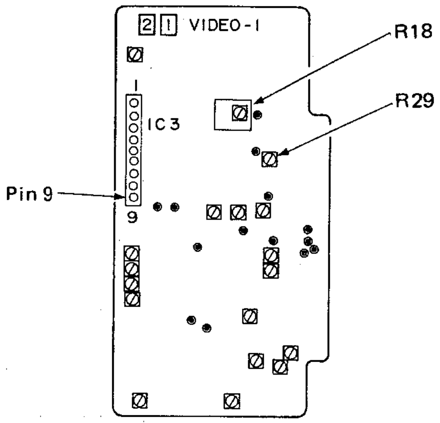
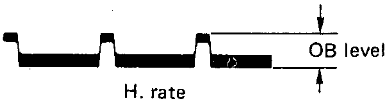
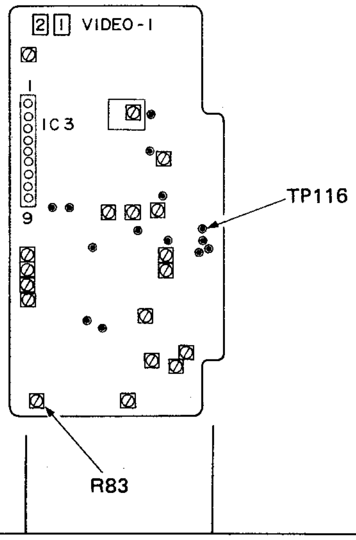
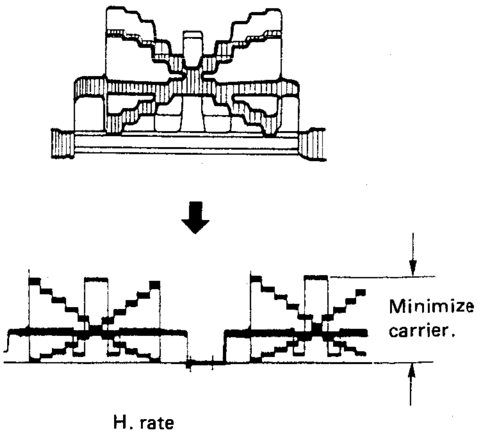
1. Test pattern illumination
   Use halogen lamps of 3200°K or more and set them to illuminate the test pattern evenly at approximately 4,000 Lux with the aid of a lux meter.
   Note that proper illumination of the test pattern is essential for performing correct adjustments. (It is recommended to use two or more halogen lamps.)
2. Test patterns
   Use new and clean test patterns.
3. This model adopts the fully automatic color temperature sensing system. Any adjustment such as white balance adjustment relating to the system is remarkably effected by ray and light applied to the color sensor.
   Pay careful attention to other light (fluorescent lamp, etc.) than the proper pattern illumination.
4. For adjustments, set the controls to the following positions unless otherwise specified.

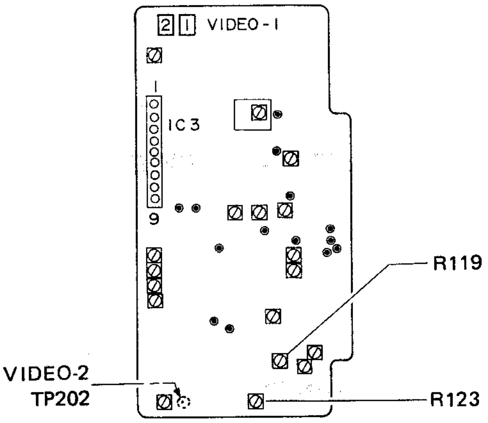
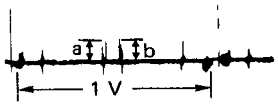
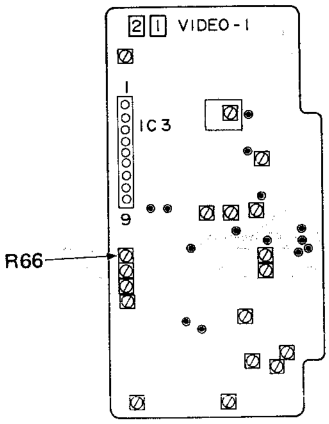
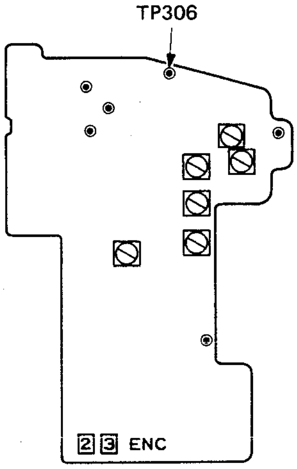
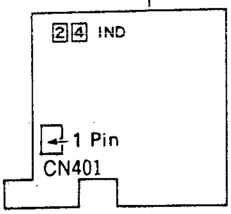
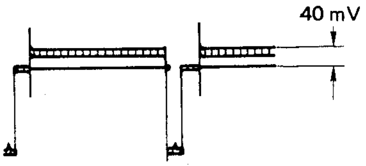
Control		Setting position
White Balance	:	PRESET INDOOR
Focus	:	MANUAL
Shutter Speed	:	STD
Iris	:	AUTO

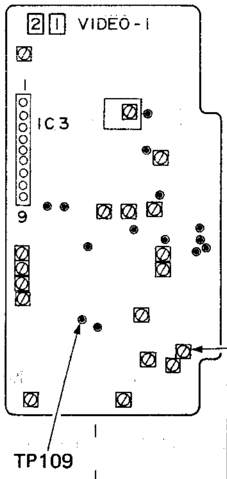
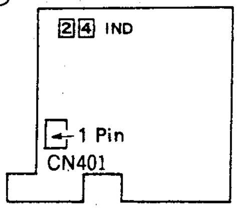
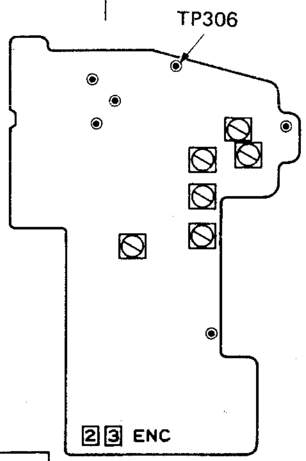
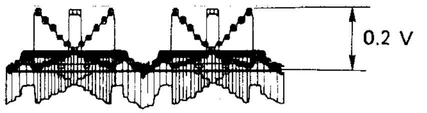
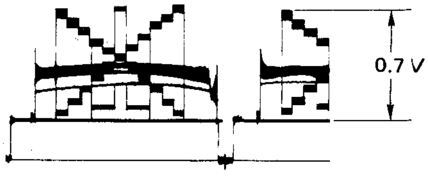
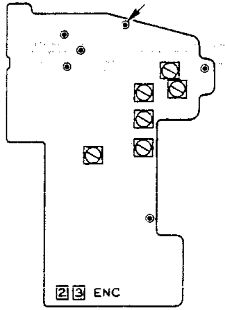
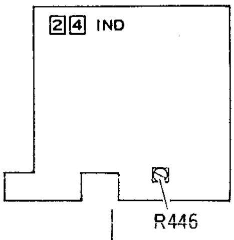
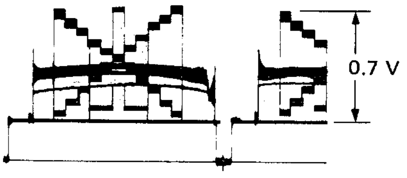
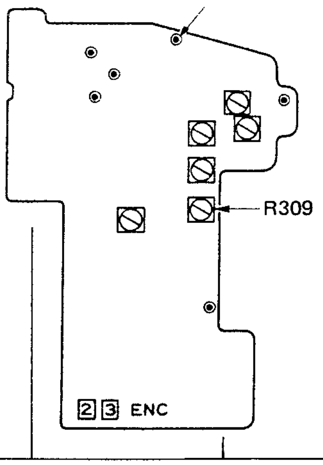
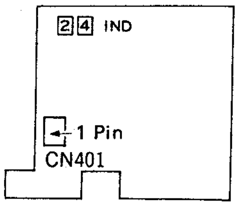
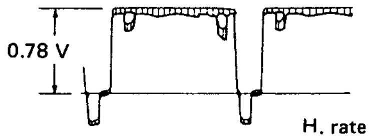
3.7.6 Adjustment procedure

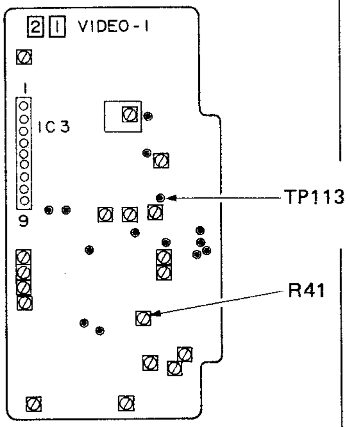
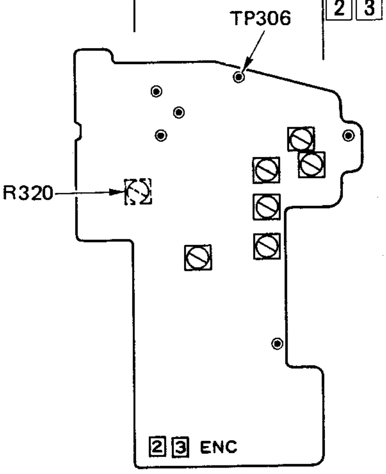
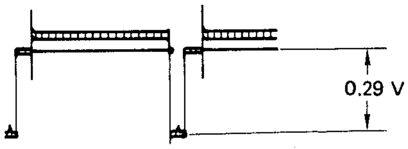
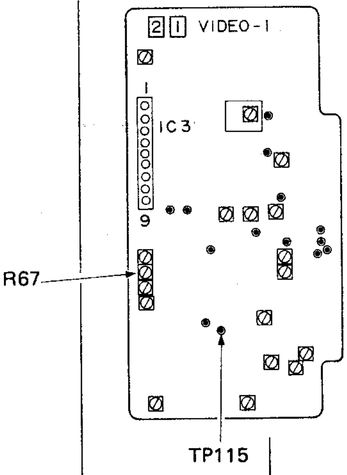
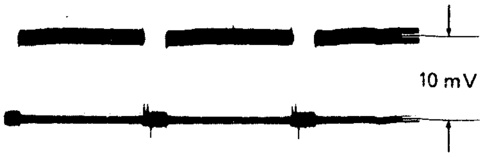
The following are the whole steps to adjust all VRs and other controls of the camera section in the order of adjustments. Consequently, here are some steps unnecessary for practical adjustments and repairs. Perform only the necessary items in practice.

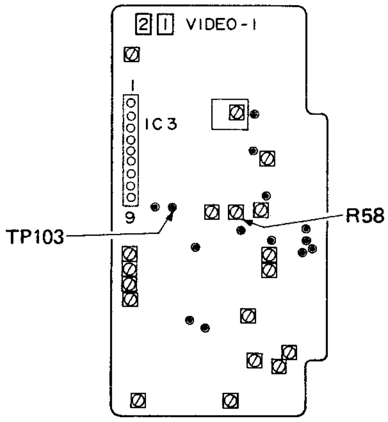
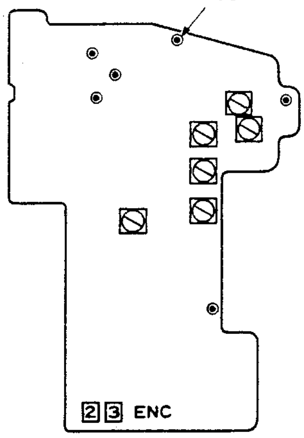
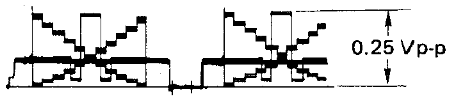
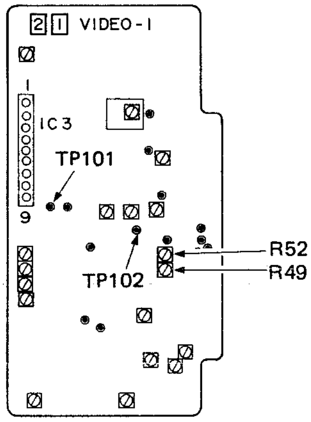
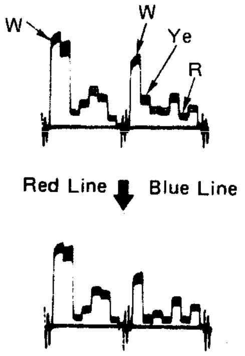
1. Clock Osc. (VIDEO-1 C5)
2. Blooming (VIDEO-1 R29)
3. Y_H Balance (VIDEO-1 R83)
4. V. Edge (2H/H) Balance (VIDEO-1 R119, R123)
5. Y_H Setup (VIDEO-1 R66)
6. Y_H Gain (VIDEO-1 R147)
7. EE LEVEL (INDICATOR R446)
8. White Clip (ENCODER R309)
9. AGC Gain (VIDEO-1 R41)
10. Sync. Level (ENCODER R320)
11. Y_L Setup (VIDEO-1 R67)
12. Y_L Process INPUT LEVEL (VIDEO-1 R58)
13. R/B Separation (VIDEO-1 R52, R49)
14. R/B Process INPUT LEVEL (FAW R537, R521)
15. Color Difference Balance (VIDEO-2 R244)
16. Noise Suppressor (VIDEO-2 R248)
17. Carrier Balance (ENCODER R326, R327)
18. Chroma Offset (VIDEO-2 R229)
19. Preset Indoor (VIDEO-1 R54, R56, R68, R110)
20. Preset FL (FAW R540, R524)
21. Preset Outdoor (FAW R543, R527)
22. Auto White Indoor (FAW R503, R506)
23. Auto White Outdoor (FAW R553, R549)
24. Indoor Limiter (FAW R515, R534)
25. Outdoor Limiter (FAW R518, R530)
26. Burst Level (ENCODER R336)
27. Burst Phase, B-Y Gain, Chroma Gain (VIDEO-1 R144, ENCODER R301, R333)
28. Indicator Adjust (IND R402)
29. Back Focus

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	Clock Osc.  2 1 VIDEO-1 C5 Pin 6 IC 3 1 9	–	IC3 Pin 6 2 1 VIDEO-1	C5 (CLOCK OSC) 2 1 VIDEO-1	1) Connect a frequency counter to IC3 pin 6, and adjust C5 to obtain 12.713285 MHz ± 80 MHz.
2	Blooming  2 1 VIDEO-1 R18 R29 IC 3 1 Pin 9 9	–	TV-monitor IC3 9 pin 2 1 VIDEO-1	R29 (BLOOMING) 2 1 VIDEO-1 R18 (OB level) RB board	1) Cap the lens and observe waveform at pin of IC3 of the 2 1 VIDEO-1 board. 2) Adjust R18 so that the OB level becomes maximum.  OB level H. rate 3) Open the cap and pick up a fluorescent light and observe the image on a TV monitor. 4) Turn R29 fully in both directions and notice the range in which blooming occurs. 5) Then adjust R29 to where blooming is absent. 6) Cap the lens and adjust R18 so that OB level becomes 50 mV.
3	YH Balance  2 1 VIDEO-1 IC 3 1 9 TP116 R83	Grey scale	TP116 (1H DL) 2 1 VIDEO-1	R83 (YH BALANCE) 2 1 VIDEO-1	1) Pick up the grey scale pattern and observe waveform at TP116. 2) Adjust R83 to minimize carrier waveform on the whole.  Minimize carrier. H. rate

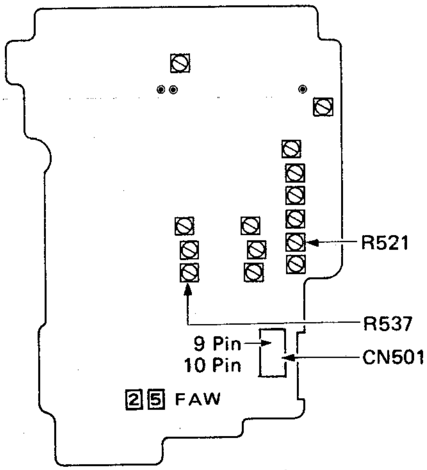
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
4	V. Edge (2H/1H) Balance	Grey scale  [2][1] VIDEO-1 IC3 1 9 R119 VIDEO-2 TP202 R123	TP202 (V. EDGE) [2][2]VIDEO-2	R119 (V. EDGE 2H) R123 (V. EDGE 1H) [2][1]VIDEO-1	1) Pick up the grey scale pattern and observe waveform at TP202. 2) Adjust R123 so that average level of the waveform becomes minimum. 3) Next adjust R119 so that levels of [a] and [b] of the waveform (See figure) becomes equal.  V. rate
5	Y_H Setup	 [2][1] VIDEO-1 IC3 1 9 R66	TP306 (Y OUT) [2][3]ENCODER  TP306 [2][3] ENC  [2][4] IND 1 Pin CN401	R66 (Y_H SETUP) [2][1]VIDEO-1	1) Connect a wire to pin 1 of CN401 of the [2][4]IND board and GND. 2) Adjust R66 so that the setup level at TP306 becomes 40 mV. 3) Disconnect the wire from GND. **Note:** After the adjustment is completely performed, remove the wire from pin 1 of CN401 of [2][4]IND board.  H. rate

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
6	Y_H Gain	Grey scale  $\boxed{2}\boxed{1}$ VIDEO-I IC3 1 9 R147 TP109	TP109 (SAMPLING) $\boxed{2}\boxed{1}$VIDEO-1 TP306 (Y OUT) $\boxed{2}\boxed{3}$ENCODER  $\boxed{2}\boxed{4}$ IND 1 Pin CN401	R147 (Y_H GAIN) $\boxed{2}\boxed{1}$VIDEO-1  TP306 $\boxed{2}\boxed{3}$ ENC	1) Connect the oscilloscope to TP109 with a resistor of approx. 10 kΩ, and pick up the grey scale pattern. 2) Connect a wire to pin 1 of CN401 of $\boxed{2}\boxed{4}$ IND board, and supply DC voltage so that signal level at TP109 becomes 0.2 V.  3) Connect the oscilloscope to TP306 and adjust R147 to obtain 0.7 V of signal level.  4) Open the wired circuit. 5) Again confirm the Y_H setup of the above step 5. **Note:** After completion of the adjustment, remove the wire from CN401 pin 1 of $\boxed{2}\boxed{4}$ IND board.
7	EE Level	Grey scale  TP306 $\boxed{2}\boxed{3}$ ENC	TP306 (Y OUT) $\boxed{2}\boxed{3}$ENCODER	R446 (IRIS ADJ) $\boxed{2}\boxed{4}$INDICATOR  $\boxed{2}\boxed{4}$ IND R446	1) Connect the oscilloscope to TP306. 2) With the iris set to AUTO, adjust R446 so that EE level becomes 0.7 V. 
8	White Clip	Grey scale  TP306 R309 $\boxed{2}\boxed{3}$ ENC	TP306 (Y OUT) $\boxed{2}\boxed{3}$ENCODER	R309 (W. CLIP) $\boxed{2}\boxed{3}$ENCODER  $\boxed{2}\boxed{4}$ IND 1 Pin CN401	1) Connect the oscilloscope to TP306 and pick up the grey scale pattern. 2) Connect a wire to pin 1 of CN401 of $\boxed{2}\boxed{4}$ IND board, and load the test point with DC voltage so that signal waveform becomes broken on the oscilloscope screen (Iris: open, supply voltage: 2.6 V approx.). 3) Adjust R309 to obtain 0.78 V of clipping level. 4) Open the wired circuit. **Note:** After the adjustment is completed, remove the wire from pin 1 of CN401 of $\boxed{2}\boxed{4}$ IND board. 

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
9	AGC	Lens: Closed  2 1 VIDEO-1 IC3 1 9 TP113 R41	TP113 (AGC) 2 1 VIDEO-1	R41 (AGC) 2 1 VIDEO-1	1) Cap the lens. 2) With the oscilloscope connected to TP113, adjust R41 to obtain 1.1 V of the DC voltage.
10	Sync Level	Lens: Closed  TP306 R320 2 3 ENC	TP306 (Y OUT) 2 3 ENCODER	R320 (SYNC LEVEL) 2 3 ENCODER	1) Cap the lens. 2) Adjust R320 so that signal level at TP306 becomes 0.29 V.  H. rate
11	Y_L Setup	Lens: Closed  2 1 VIDEO-1 IC3 1 9 R67 TP115	TP115 (Y_L) 2 1 VIDEO-1	R67 (Y_L SETUP) 2 1 VIDEO-1	1) Cap the lens. 2) Connect the oscilloscope to TP115. 3) Adjust R67 so that the setup level becomes 10 mV.  V. rate

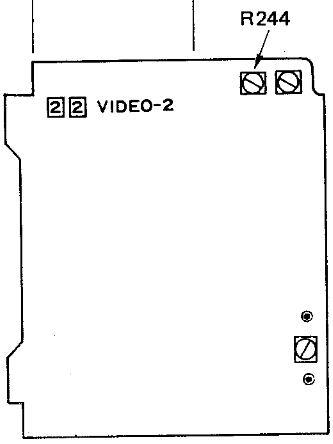
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
12	Y_L Process Input Level	Grey scale  	TP306 (Y OUT) $\boxed{2}\boxed{3}$ENCODER TP103 (Y_L) $\boxed{2}\boxed{1}$VIDEO-1	R58 (Y_L LEVEL) $\boxed{2}\boxed{1}$VIDEO-1  	1) Observing the oscilloscope, confirm that signal level at TP306 is 0.7 V. (Refer to the step 7 "EE Level".) 2) Connect the oscilloscope to TP103 and adjust R58 so that signal level at TP103 becomes 0.25 Vp-p.  H. rate
13	R/B Separation	Color bar chart	TP101 (R) TP102 (B) $\boxed{2}\boxed{1}$VIDEO-1  2 1 VIDEO-1 IC3 1 9 TP101 TP102 R52 R49	R52 (RED SEPA.) R49 (BLUE SEPA.) $\boxed{2}\boxed{1}$VIDEO-1	1) Pick up the color bar chart. 2) Observe waveform at TP101 with the oscilloscope and adjust the oscilloscope's time axis to check signals of red and blue lines respectively. 3) Taking notice the blue line, adjust R52 to equalize signals levels of the color pattern's yellow and red sections. 4) In the same manner as in 2) above, observe waveform at TP102 and adjust its time axis. 5) Taking notice the blue line, adjust R49 to equalize signal levels of the color pattern's yellow and red sections. **Note:** The blue line means the scanning line that is the smaller in signal level of the color pattern's white section.  H. rate

<table>
<tr><th>No.</th><th>Item</th><th>Signal & Mode</th><th>Check Point</th><th>Adjustment Parts</th><th>Description</th></tr>
<tr><td>14</td><td>P/B Process Input Level</td><td>Grey scale



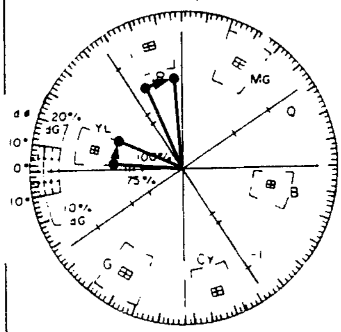
R521
R537
9 Pin
10 Pin
CN501
25 FAW

</td><td>CN501 pin 9
CN501 pin 10
25 FAW</td><td>R537 (PRESET R INDOOR)
R521 (PRESET B INDOOR)
25 FAW</td><td>1) With the oscilloscope connected to pin 9 of CN501, and pick up the grey scale. Adjust R537 to obtain 2.58 V of DC voltage.
2) Change the oscilloscope connection to pin 10 of CN501, and adjust R521 to obtain 2.74 V of the DC voltage.</td></tr>
<tr><td>15 (A)</td><td>Color Difference Balance</td><td>Color bar chart



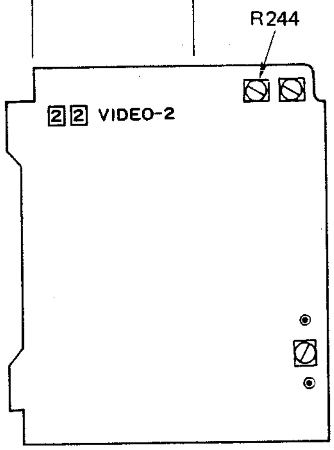
R244
22 VIDEO-2

</td><td>Vectorscope



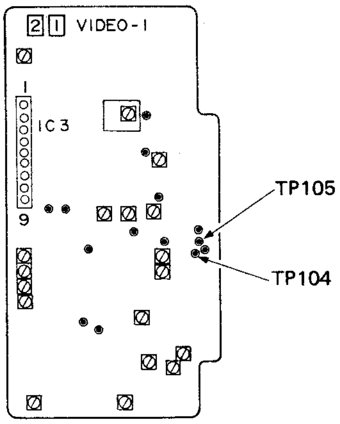
MG
Q
B
CY
G
YL
R
20%
10%
75%
100%

</td><td>R244 (COLOR DIF. BAL.)
22 VIDEO-2</td><td>1) Pick up the color bar chart.
2) By use of a vectorscope, adjust R244 so that dots are positioned at the same point being into one (to minimize the red signal's movement).</td></tr>
<tr><td>15 (B)</td><td>Color Difference Balance</td><td>Color bar chart



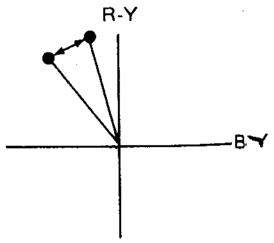
R244
22 VIDEO-2

</td><td>TP104 (B-Y)
TP105 (R-Y)
21 VIDEO-1



21 VIDEO-1
IC3
1
9
TP105
TP104

</td><td>R244 (COLOR DIF. BAL.)
22 VIDEO-2</td><td>1) Pick up the color bar chart.
2) Set the oscilloscope to observe signal from TP104 on the X-axis while TP105's signal on the Y-axis (X-Y mode).
3) Adjust R244 to overlap dots at the same point being into one (to minimize the red signal's movement).



</td></tr>
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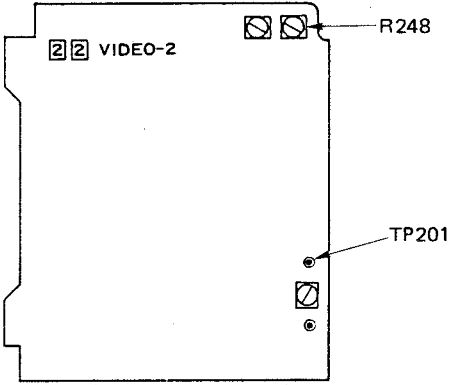
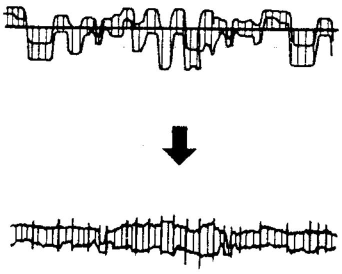
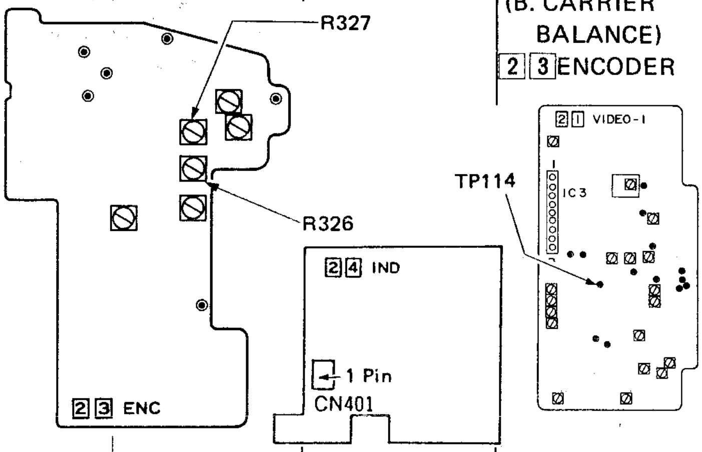
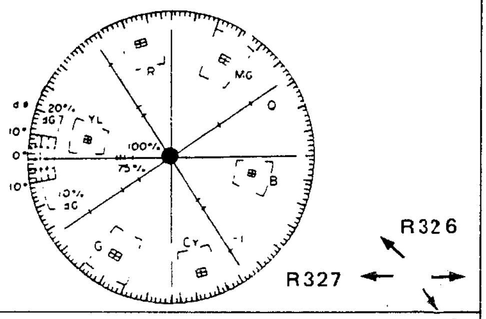
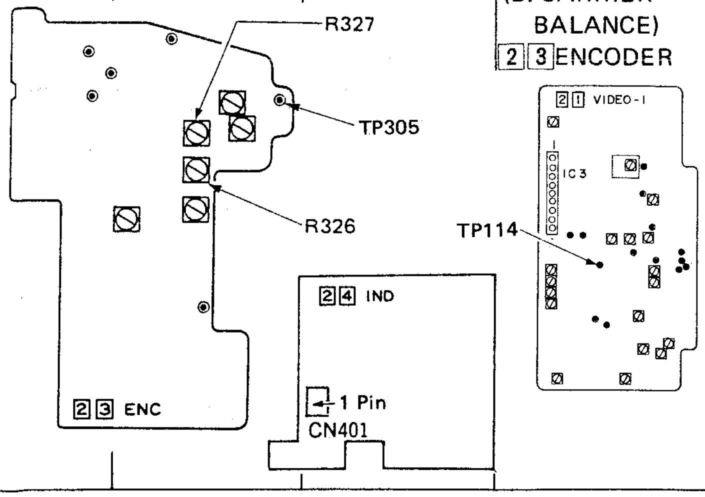
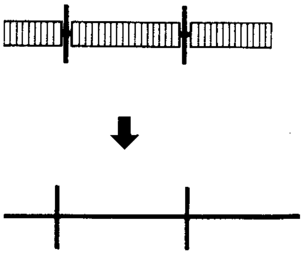
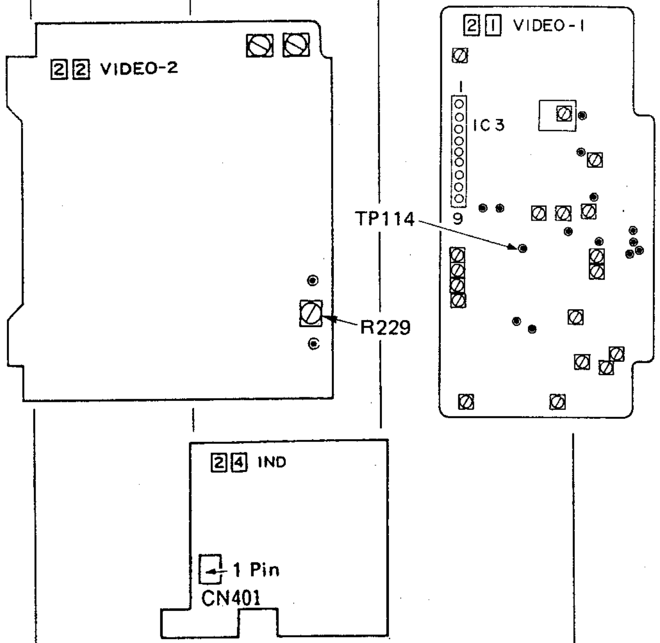
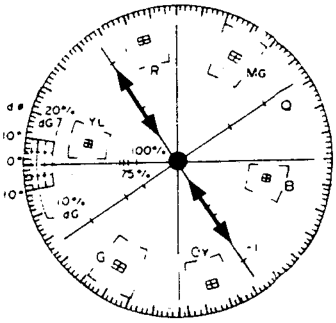
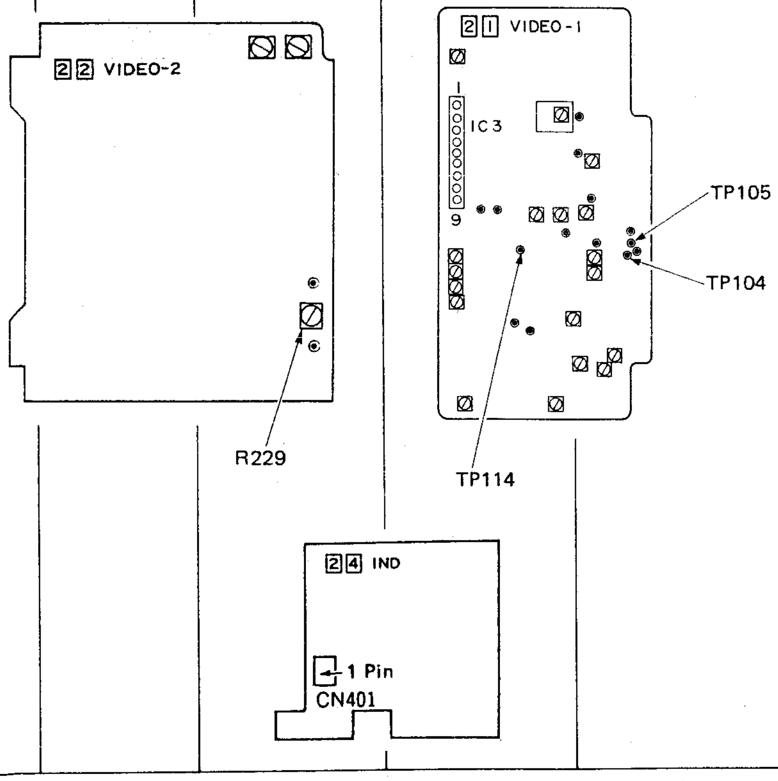
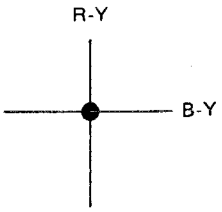
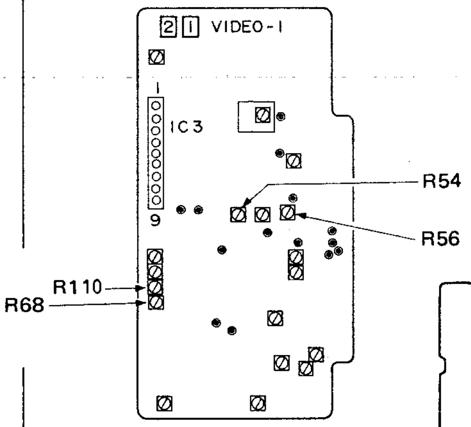
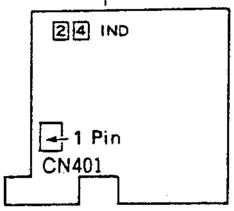
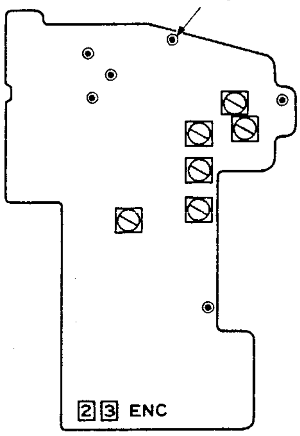
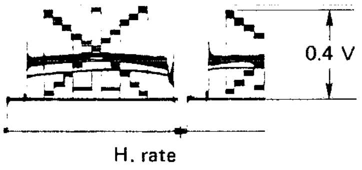
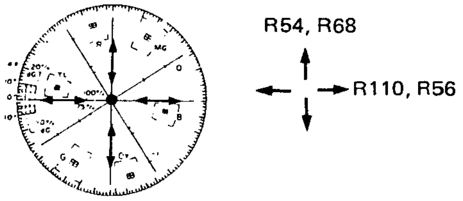
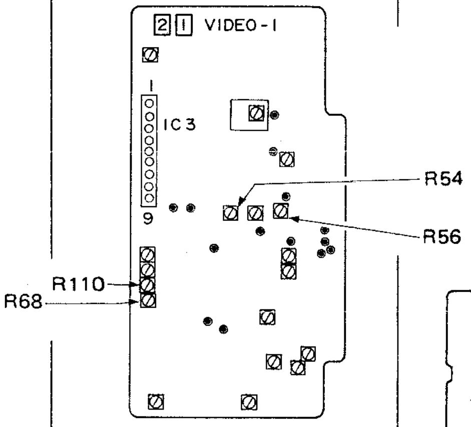
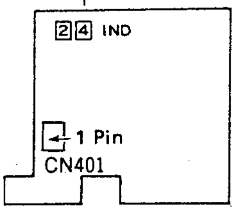
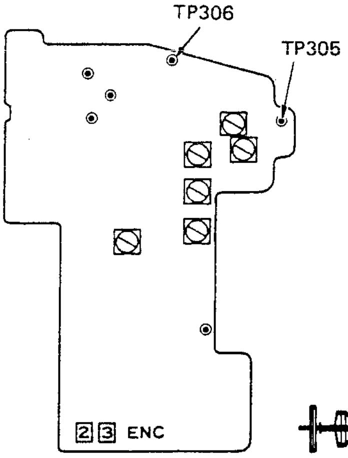
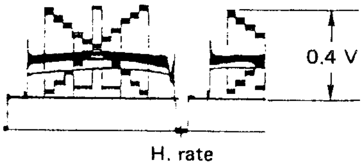
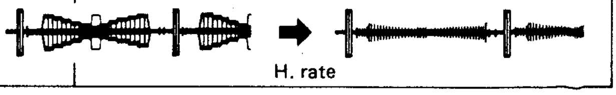
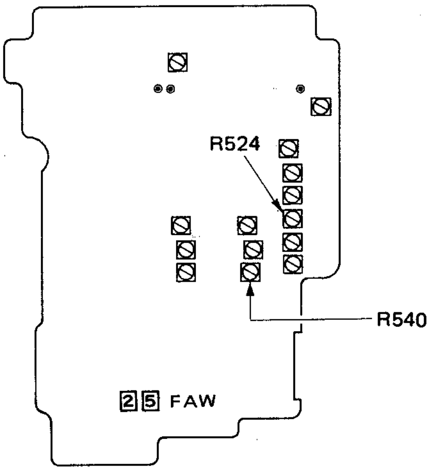
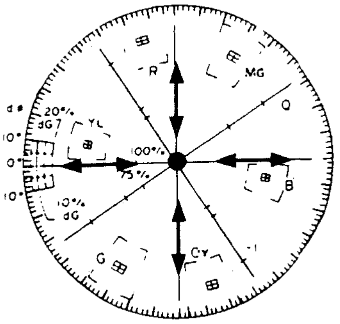
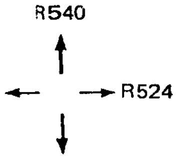
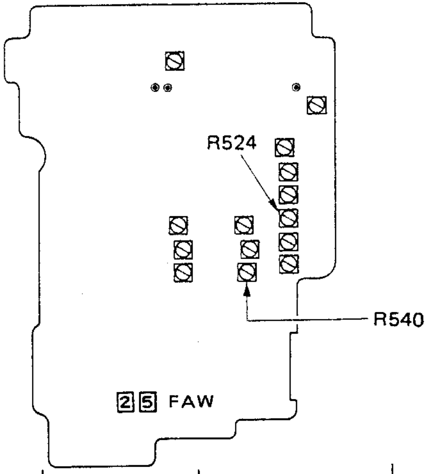
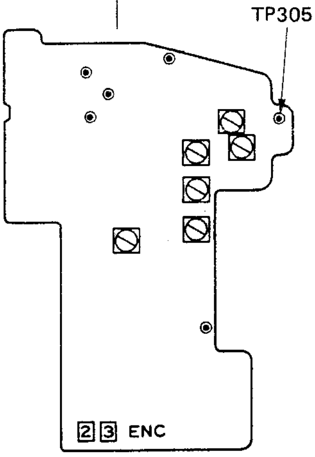
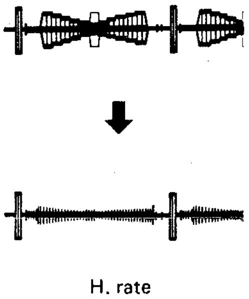
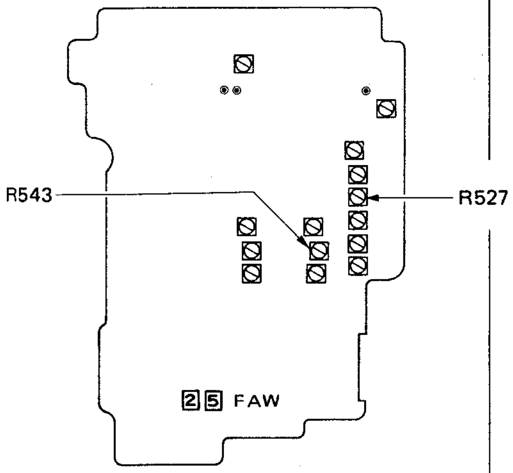
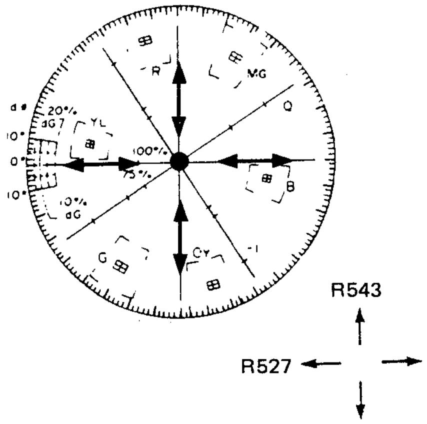
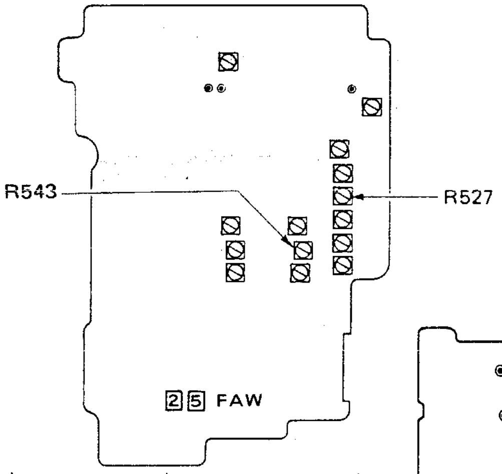
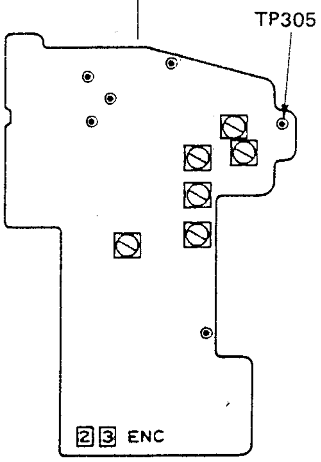
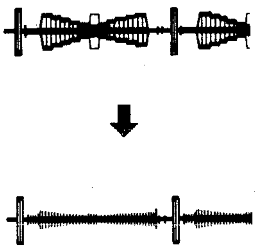
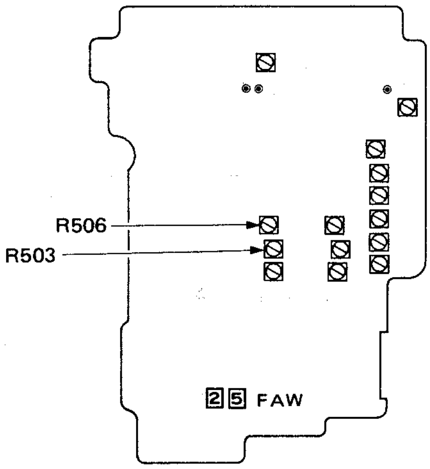
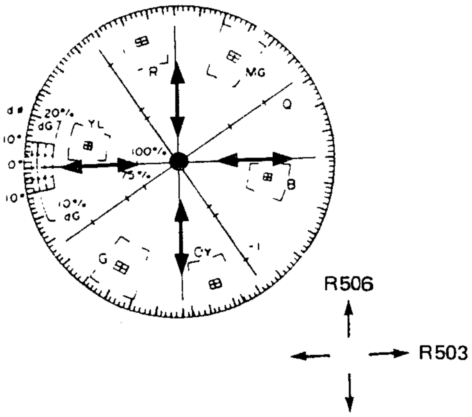
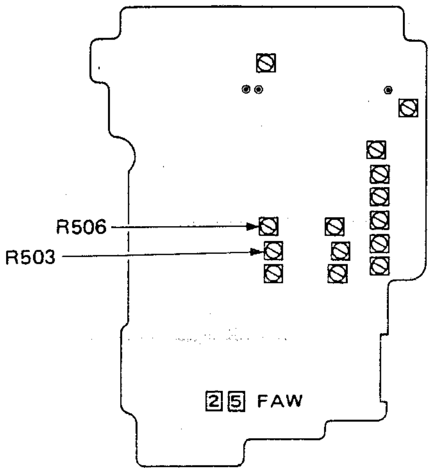
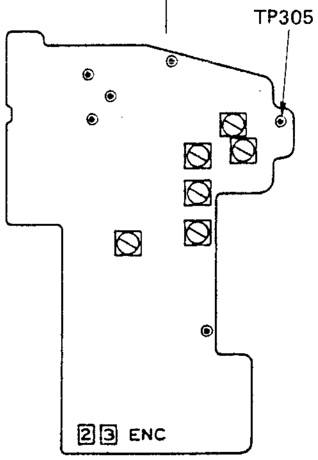
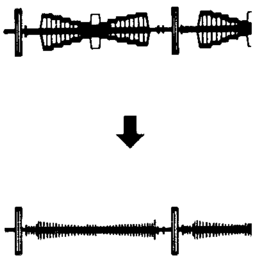
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
16	Noise Suppressor Balance	Color bar chart	TP201 (COLOR NOISE) [2][2]VIDEO-2  [2][2] VIDEO-2 R248 TP201	R248 (NOISE SUP) [2][2]VIDEO-2	1) With the oscilloscope connected to TP201 pick up the color bar chart. 2) Adjust R248 to uniform waveform level at TP201 to the limit.  H. rate
17 (A)	Carrier Balance		Vectorscope TP114 (P. CTL) [2][1]VIDEO-1  R327 R326 [2][3] ENC [2][4] IND 1 Pin CN401 TP114 [2][1] VIDEO-1 IC3	R326 (R. CARRIER BALANCE) R327 (B. CARRIER BALANCE) [2][3]ENCODER	1) Shortcircuit between pin 1 of CN401 of [2][4] IND board and GND with a wire. 2) Connect a wire to TP14 and GND. 3) Adjust R326 and R327 so that dots are positioned at the center of the vectorscope. 4) Disconnect the wires from GND. **Note:** After completion of the adjustment, remove the wire from pin 1 of CN401 of [2][4] IND board.  R MG YL B CY G 100% 75% R326 R327
17 (B)	Carrier Balance	—	TP114 (P. CTL) [21] VIDEO-1 TP305 (C. OUT) [2][3]ENCODER  R327 TP305 R326 [2][3] ENC [2][4] IND 1 Pin CN401 TP114 [2][1] VIDEO-1 IC3	R326 (R. CARRIER BALANCE) R327 (B. CARRIER BALANCE) [2][3]ENCODER	1) Shortcircuit between pin 1 of CN401 of [2][4] and GND with a wire. 2) Connect a wire to TP114 and GND. 3) Connect the oscilloscope to TP305 and adjust VRs to minimize carrier leak. 4) Disconnect the wire from GND. **Note:** After the adjustment is completed, remove the wire from pin 1 of CN401 of [2][4] IND board.  H. rate

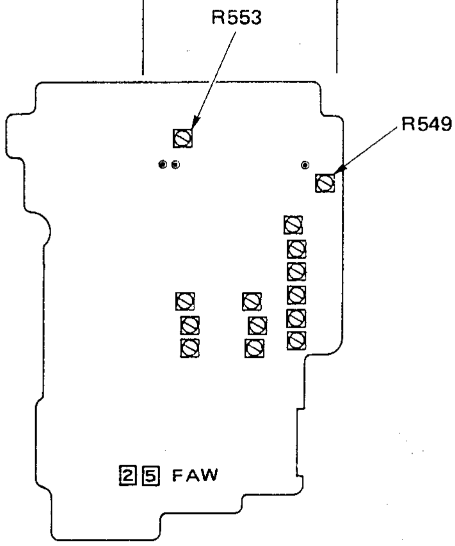
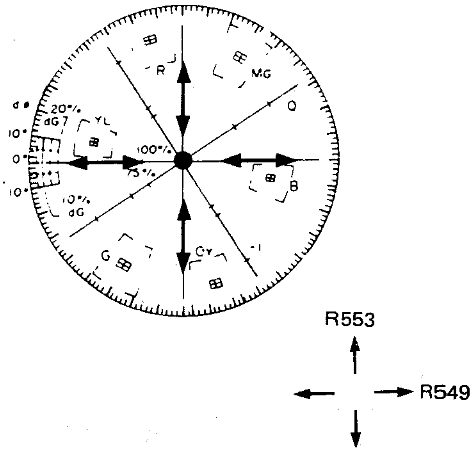
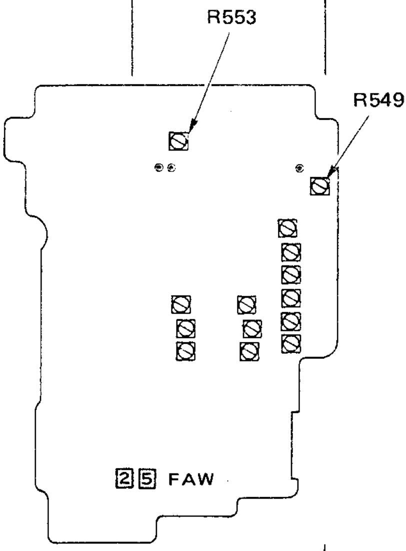
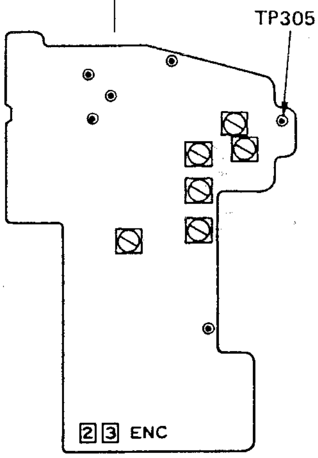
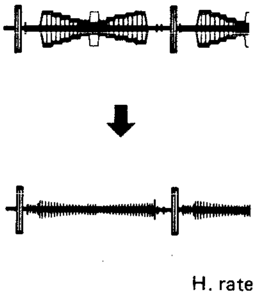
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
18 (A)	Chroma Offset	–	Vectorscope TP114 (P. CTL) [2][1]VIDEO-1	R229 (CHROMA OFFSET) [2][2]VIDEO-2	1) Shortcircuit between pin 1 of CN401 of [2][4] IND board and GND with a wire. 2) Connect a wire to TP114 and GND. 3) Adjust R229 so that dots are centered at the same point on the vectorscope. 4) Disconnect the wires from GND. **Note:** After the complete adjustment, remove the wire from pin 1 of CN401 of [2][4] IND board.
	 [2][2] VIDEO-2 R229 [2][1] VIDEO-1 IC3 TP114 [2][4] IND 1 Pin CN401				 R MG Q YL 100% 75% B 20% dG 10% G CY -I
18 (B)	Chroma Offset	–	TP104 (B-Y) TP105 (R-Y) TP114 (P. CTL) [2][1]VIDEO-1	R229 (CHROMA OFFSET) [2][2]VIDEO-2	1) Connect a wire between pin 1 of CN401 of [2][4]IND board and GND. 2) Connect a wire to TP114 and GND. 3) Set the oscilloscope to observe signal from TP104 on the X-axis while TP105's signal on the Y-axis (X-Y mode). 4) Adjust R229 to overlap dots at the center of the screen. 5) Disconnect the wire from GND. **Note:** After complete adjustment, remove the wire from pin 1 of CN401 of [2][4] IND board.
	 [2][2] VIDEO-2 R229 [2][1] VIDEO-1 IC3 TP105 TP104 TP114 [2][4] IND 1 Pin CN401				

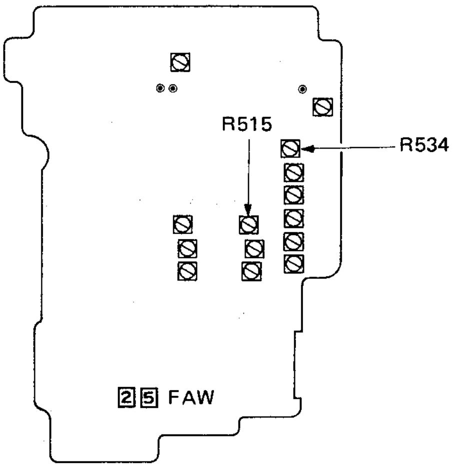
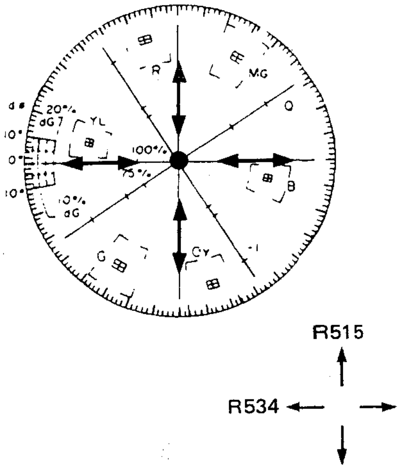
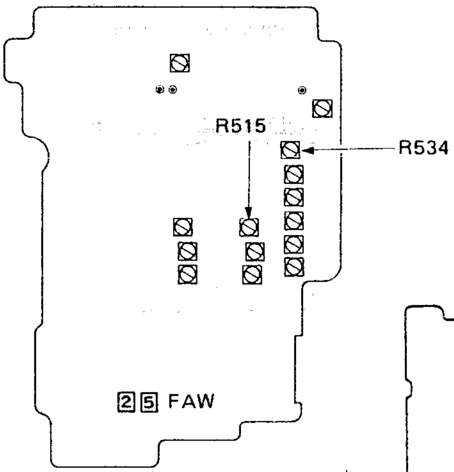
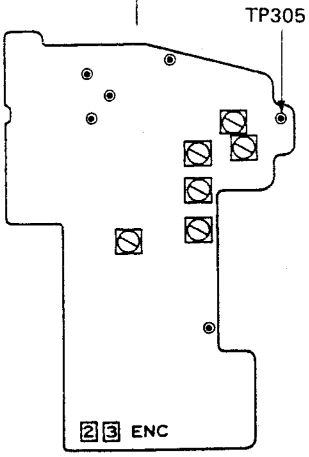
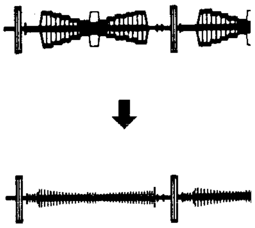
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
19 (A)	Preset Indoor  2 1 VIDEO-1 IC3 9 R54 R56 R110 R68  2 4 IND 1 Pin CN401	Grey scale	Vectorscope TP306 (Y OUT) 2 3 ENCODER  TP306 2 3 ENC	R68 (R SETUP) R110 (B SETUP) R54 (R LEVEL) R56 (B LEVEL) 2 1 VIDEO-1	1) Pick up the grey scale pattern. 2) Connect a wire to pin 1 of CN401 of 2 4 IND board. 3) Observing the oscilloscope connected to TP306, supply DC voltage through the wire so that signal level at TP306 becomes 0.4 V.  4) Adjust R68 and R110 so that R and B setup levels center on the vectorscope respectively. 5) Open the wired circuit. 6) Adjust R54 and R56 to center R and B signal levels on the vectorscope. 7) Repeat the above steps 3) through 6) to gain satisfactory results for each item. **Note:** After complete adjustments, remove the wire from pin 1 of CN401 of 2 4 IND board.  R54, R68 R110, R56
19 (B)	Preset Indoor  2 1 VIDEO-1 IC3 9 R54 R56 R110 R68  2 4 IND 1 Pin CN401	Grey scale	TP305 (C. OUT) TP306 (Y. OUT) 2 3 ENCODER  TP306 TP305 2 3 ENC	R68 (R SETUP) R110 (B SETUP) R54 (R LEVEL) R56 (B LEVEL) 2 1 VIDEO-1	1) Pick up the grey scale pattern. 2) Connect a wire to pin 1 of CN401 of 2 4 IND board. 3) Observing the oscilloscope connected to TP306, supply DC voltage through the wire so that signal level at TP306 becomes 0.4 V.  4) Observing signal at TP305 with the oscilloscope, adjust R68 and R110 to minimize carrier leaks of both R and B signals. 5) Open the wired circuit. 6) Observing waveform at TP305 with the oscilloscope, adjust R54 and R56 to minimize carrier leaks of R and B levels. 7) Repeat the above steps 3) through 6) to gain satisfactory results for each item. **Note:** After completion of adjustments, remove the wire from pin 1 of CN401 of 2 4 IND board. 

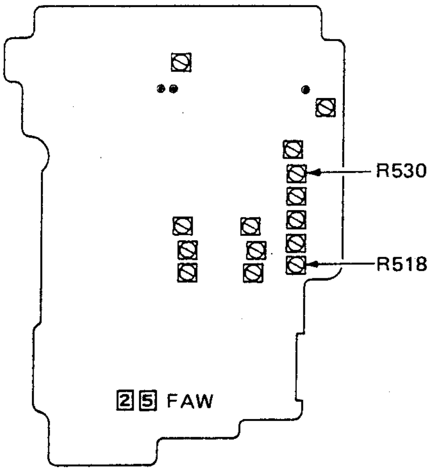
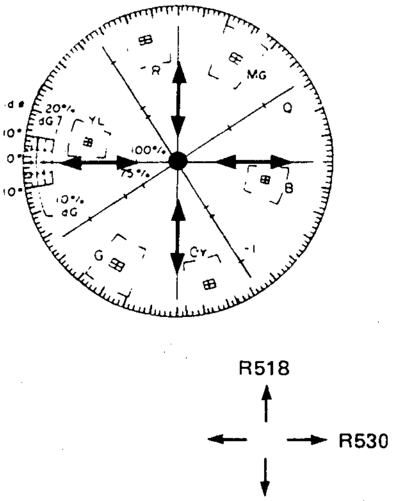
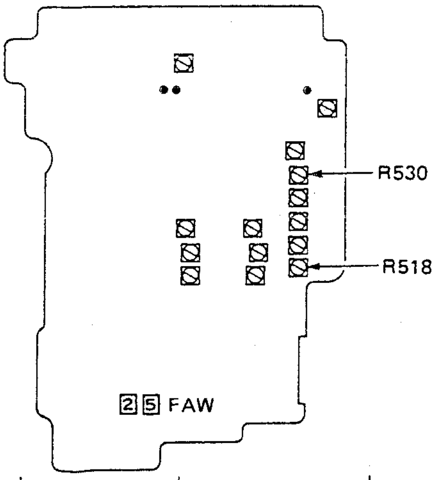
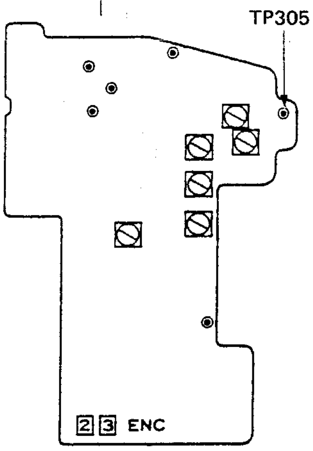
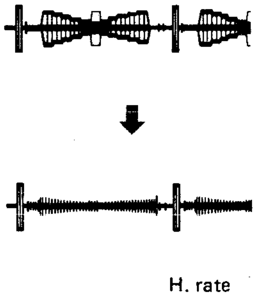
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
20 (A)	Preset FL	Grey scale W. BAL. SW: FL (Fluorescent light) mode Color temperature conversion filters (C8 + CC10Y) → Lens  R524 R540 $\boxed{2}\boxed{5}$ FAW	Vectorscope	R540 (PRESET R FL) R524 (PRESET B FL) $\boxed{2}\boxed{5}$FAW	1) With C8 + CC10Y filters attached to the lens pick up the grey scale. 2) Press the LCD WHITE BALANCE switch to set the mode for FL (fluorescent light) mode. 3) Adjust R540 and R524 alternately to position dots on the vectorscope in the center of the screen.  R MG YL B G CY 100% 75% 20% 10% 
20 (B)	Preset FL	Grey scale W. BAL. SW: FL (Flourescent light) mode Color temperature conversion filters (C8 + CC10Y) → Lens  R524 R540 $\boxed{2}\boxed{5}$ FAW	TP305 (C. OUT) $\boxed{2}\boxed{3}$ENCODER  TP305 $\boxed{2}\boxed{3}$ ENC	R540 (PRESET R FL) R524 (PRESET B FL) $\boxed{2}\boxed{5}$FAW	1) With C8 + CC10Y filters attached to the lens pick up the grey scale. 2) Press the LCD WHITE BALANCE switch to the mode for FL (fluorescent light) mode. 3) Adjust R540 and R524 alternately to minimize carrier leakage at TP305. 

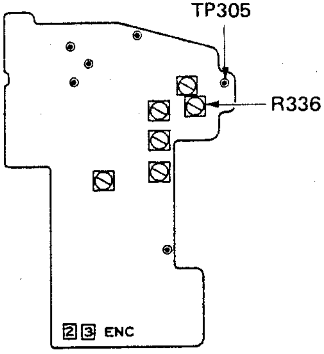
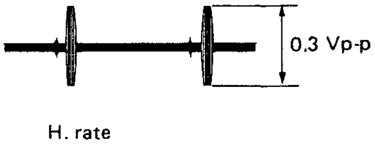
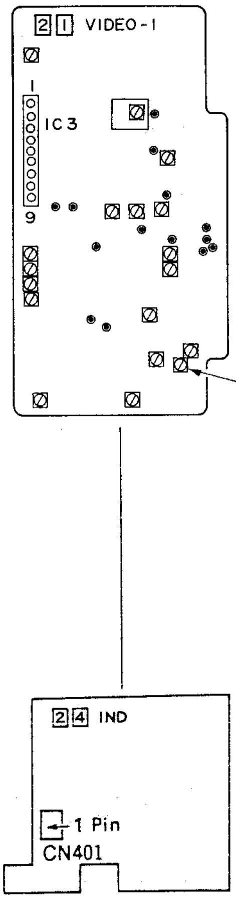
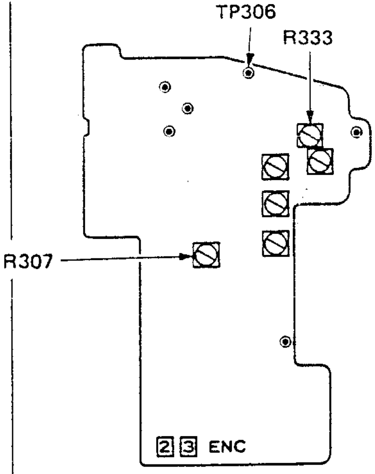
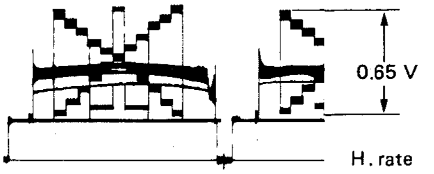
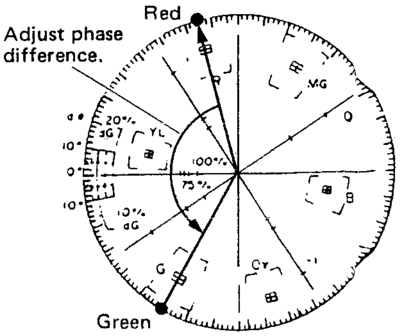
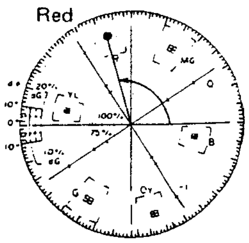
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
21 (A)	Preset Outdoor	Grey scale W. BAL. SW: OUTDOOR Color temperature conversion filter C12 → Lens 	Vectorscope	R543 (PRESET R OUTDOOR) R527 (PRESET B OUTDOOR) 2 5 FAW	1) With C12 filter attached to the lens, pick up the grey scale. 2) Press the LCD WHITE BALANCE switch to the mode for OUTDOOR (sunlight). 3) Adjust R543 and R527 alternately to position dots on the vectorscope in the center of the screen.  R MG YL B CY G Q -I 20% 100% 75% 10% R543 R527
21 (B)	Preset Outdoor	Grey scale W. BAL. SW: OUTDOOR Color temperature conversion filter C12 → Lens 	TP305 (C. OUT) 2 3 ENCODER 	R543 (PRESET R OUTDOOR) R527 (PRESET B OUTDOOR) 2 5 FAW	1) With C12 filter attached to the lens, pick up the grey scale. 2) Press the LCD WHITE BALANCE switch to the mode for OUTDOOR (sunlight). 3) Adjust R543 and R527 alternately to minimize carrier leakage at TP305.  H. rate

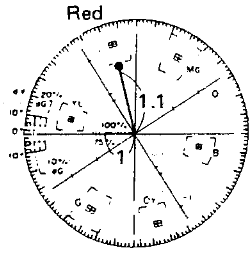
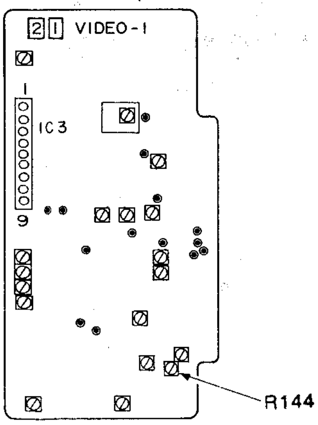
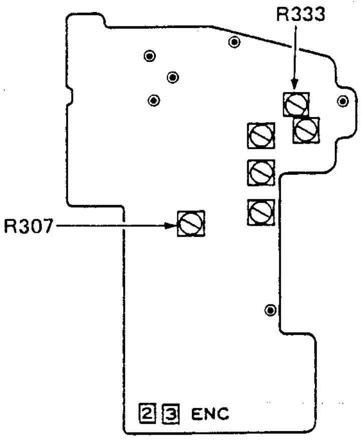
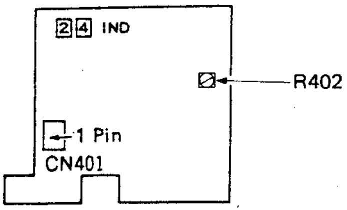
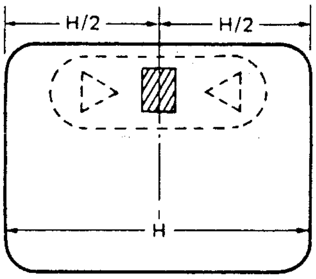
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
22 (A)	Auto White Indoor	Grey scale W. BAL. SW: AUTO mode  R506 R503 25 FAW	Vectorscope	R503 (AW INDOOR B) R506 (AW INDOOR R) 25 FAW	1) Press the LCD WHITE BALANCE switch for AUTO mode and pick up the grey scale. 2) Adjust R503 and R506 alternately to position dots on the vectorscope in the center of the screen.  R MG YL Q B G CY I 100% 75% 20% dG 10° 0° 10° 10% dG R506 R503
22 (B)	Auto White Indoor	Grey scale W. BAL. SW: AUTO mode  R506 R503 25 FAW	TP305 (C. OUT) 23 ENCODER  TP305 23 ENC	R503 (AW INDOOR B) R506 (AW INDOOR R) 25 FAW	1) Press the LCD WHITE BALANCE switch for the AUTO mode and pick up the grey scale. 2) Adjust R503 and R506 alternately to minimize carrier leakage at TP305. 

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
23 (A)	Auto White Outdoor	Grey scale W. BAL. SW: AUTO mode Color temperature conversion filters C12 → Lens & Sensor	Vectorscope 	R553 (AW R GAIN) R549 (AW B GAIN) 25 FAW	1) With C12 filters attached to the lens and the sensor, pick up the grey scale. 2) Press the LCD WHITE BALANCE switch to set the mode for AUTO. 3) Adjust R553 and R549 alternately to position dots on the vectorscope in the center of the screen.  R MG YL B G CY 20% dG 100% 75% 10% R553 R549
23 (B)	Auto White Outdoor	Grey scale W. BAL. SW: AUTO mode Color temperature conversion filters C12 → Lens & Sensor 	TP305 (C. OUT) 23 ENCODER 	R553 (AW R GAIN) R549 (AW B GAIN) 25 FAW	1) With C12 filters attached to the lens and the sensor, pick up the grey scale. 2) Press the LCD WHITE BALANCE switch to set the mode for AUTO. 3) Adjust R553 and R549 alternately to minimize carrier leakage at TP305. 

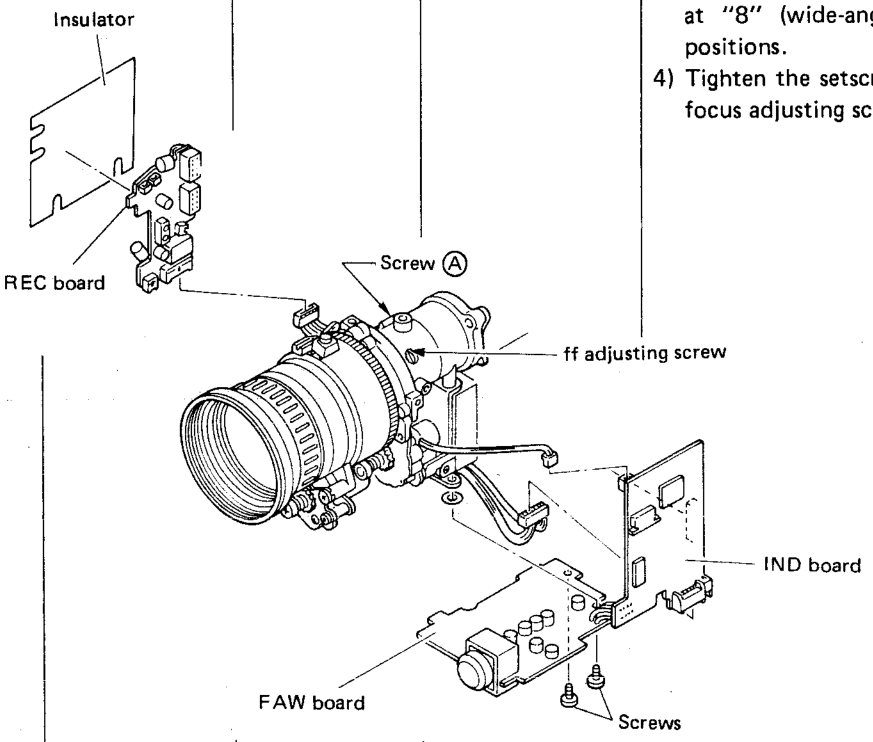
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
24 (A)	Indoor Limiter	Grey scale W. BAL. SW: AUTO mode Color temperature conversion filters W4 → Lens W14 → Sensor	Vectorscope	R515 (AW R INDOOR LIM) R534 (AW B INDOOR LIM) 25FAW	1) With the LCD WHITE BALANCE switch pressed to be set for AUTO mode, pick up the grey scale. 2) Attach W4 filters to the lens and W14 filters to the sensor. 3) Adjust R515 and R534 alternately to position dots on the vectorscope in the center of the screen.
					 R MG YL B CY G 20% dG 100% 75% 10% R515 R534
24 (B)	Indoor Limiter	Grey scale W. BAL. SW: AUTO mode Color temperature conversion filters W4 → Lens W14 → Sensor	TP305 (C. OUT) 23ENCODER	R515 (AW R INDOOR LIM) R534 (AW B INDOOR LIM) 25FAW	1) With the LCD WHITE BALANCE switch pressed to be set for AUTO mode, pick up the grey scale. 2) Attach W4 filters to the lens and W14 filters to the sensor. 3) Adjust R515 and R534 alternately to minimize carrier leakage at TP305.
					

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
25 (A)	Outdoor Limiter	Grey scale W. BAL. SW: AUTO mode Color temperature conversion filters C16 → Lens C24 → Sensor 	Vectorscope	R518 (AW R OUTDOOR LIM) R530 (AW B OUTDOOR LIM) 25FAW	1) With the LCD WHITE BALANCE switch pressed to be set for AUTO mode, pick up the grey scale. 2) Attach C16 filter to the lens and C24 filter to the sensor. 3) Adjust R518 and R530 alternately to position dots on the vectorscope in the center of the screen.  R MG YL Q 100% 75% 20% 10% dG B G CY -I R518 R530
25 (B)	Outdoor Limiter	Grey scale W. BAL. SW: AUTO mode Color temperature conversion filters C16 → Lens C24 → Sensor 	TP305 (C. OUT) 23ENCODER 	R518 (AW R OUTDOOR LIM) R530 (AW B OUTDOOR LIM) 25FAW	1) With the LCD WHITE BALANCE switch pressed to be set for AUTO mode, pick up the grey scale. 2) Attach C16 filter to the lens and C24 filter to the sensor. 3) Adjust R518 and R530 alternately to minimize carrier leakage at TP305. 

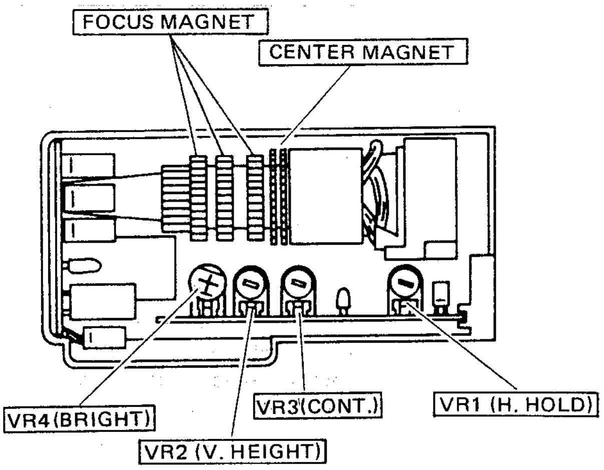
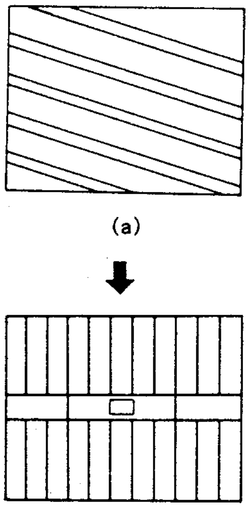
No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
26	Burst Level	Lens: Closed  TP305 R336 2 3 ENC	TP305 (C. OUT) 2 3 ENCODER	R336 (BURST LEVEL) 2 3 ENCODER	1) Cap the lens. 2) Adjust R336 so that color burst signal level at TP305 becomes 0.3 Vp-p.  0.3 Vp-p H. rate
27 (A)	Burst Phase B-Y Gain Chroma Gain  2 1 VIDEO-1 1 IC3 9 R144 2 4 IND 1 Pin CN401	Color bar chart	Vectorscope TP306 (Y. OUT) 2 3 ENCODER  TP306 R333 R307 2 3 ENC	R307 (BURST PHASE) R333 (CHROMA GAIN) 2 3 ENCODER R144 (B-Y GAIN) 2 1 VIDEO-1	1) Connect a wire to pin 1 of CN401 of [24] IND board. 2) Observing signal waveform at TP306 with the oscilloscope, supply DC voltage through the wire so that luminance level of the color bar chart's white part becomes 0.65 V.  3) Adjust R144 so that phase difference between red and green sections of the color bar chart becomes 137°.  Red Adjust phase difference. Green 4) Adjust R307 so that phase of the red section of the color bar chart becomes 104°.  5) Confirm that the burst signal level is 0.3 Vp-p. If not, perform the burst gain adjustment again. (Refer to the step 26.)

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
27 (A)					6) Adjust R333 so that chroma level of the red section of the color bar chart becomes 1.1 times larger than the burst level of 0.3 Vp-p. 
27 (B)	Burst Phase B-Y Gain Chroma Gain 	Subject easy to distinguish its color phase	Monitor TV 	R307 (BURST PHASE) R333 (CHROMA GAIN) [2][3] ENCODER R144 (B-Y GAIN) [2][1] VIDEO-1	**Note:** For this adjustment, it is required that color phase and color depth of a monitor TV used and the deck section have been completely adjusted. 1) Pick up a colored subject, and, observing the monitor TV, adjust R333 so that chroma level becomes of appropriate value. 2) Pick up a subject whose color phase is easily distinguished, and observing the monitor TV perform fine adjustments of R307 and R144 so that color tones of red, green, blue and skin tone become the most natural. **Note:** For the step 2), only fine adjustment must be made.
28	Indicator Adjust	Lens closed 	Electronic Viewfinder	R402 (IND OSC.) [2][4] INDICATOR	1) Adjust R402 (IND OSC) so that the indicator inside the electronic viewfinder is positioned at the center. 

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
29	Back Focus	Subject in the distance of 3 m Iris: Opened ND filter	VIDEO OUT (on Monitor)	Master Lens	● **Preparation** 1. Attach a proper ND filter to open the iris fully in the daylight. If the monitor screen is dark, the iris is fully opened. 2. If it would be still bright, attach additional ND filter(s) to cut the incident light and confirm that the brightness of the image does not vary by changing the iris set position. ● **Adjustment** 1) Loosen the setscrew Ⓐ, and slowly turn the ff adjusting screw to focus the lens observing the monitor. 2) Set the zoom lens at "48" graduation and confirm that the subject is in focus. 3) Set the lens focus at "3 m" graduation and shoot a subject in the distance of 3 m away. In this state, confirm that the picture is in focus in two ways that the zoom lens is set at "8" (wide-angle) and "48" (telephoto) positions. 4) Tighten the setscrew Ⓐ, and lock the back-focus adjusting screw.



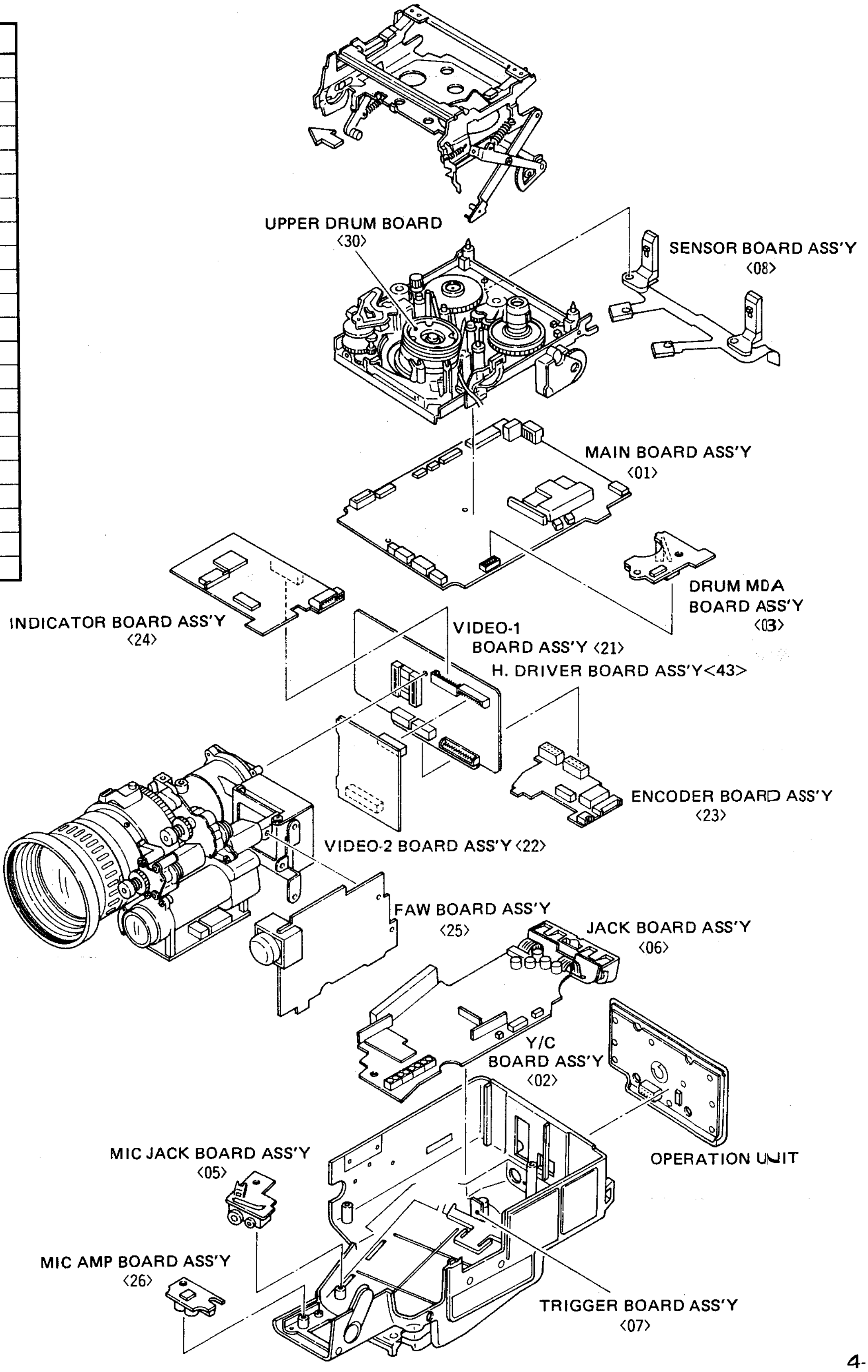
3.8 ELECTRONIC VIEWFINDER (E. VF) ADJUSTMENT

No.	Item	Signal & Mode	Check Point	Adjustment Parts	Description
1	Horizontal Sync.  FOCUS MAGNET CENTER MAGNET VR4 (BRIGHT) VR3 (CONT.) VR1 (H. HOLD) VR2 (V. HEIGHT)	Grey scale or Monoscope	E. VF (CRT)	VR1 (H. HOLD)	1) Observing the viewfinder screen, turn VR1 fully clockwise to make unstable pictures. 2) Gradually turn VR1 counterclockwise until pictures become stable. When the picture is completely stabilized, mark the VR position for future reference. 3) Turn VR1 counterclockwise again to make the picture unstable. 4) Gradually turn VR1 clockwise and stop it when the picture becomes stable again. At this time, makr the VR position, too. 5) Finally set VR1 at the midpoint between the two markings.  (a) (b) **Fig. 3-7-1**
2	Vertical Scanning	Grey scale or Monoscope	E. VF (CRT)	VR2 (V. HEIGHT)	1) Observing the viewfinder, adjust VR2 for normal picture amplitude.
3	Centering	Grey scale	E. VF (CRT)	Centering Magnet	1) Pick up the grey scale to locate it in the center of the monitor TV screen, and adjust the centering magnet so that the image of the grey scale is located in the center of the viewfinder.
4	Focus	Grey scale	E. VF (CRT)	Focus Magnet	1) Observing the viewfinder, adjust the focus magnet of the deflection yoke to obtain a clear picture of the central part of the grey scale.
5	Brightness	Iris: Closed (Lens capped)	E. VF (CRT)	VR4 (BRIGHT)	1) With the iris closed, adjust VR4 so that the CRT raster in the viewfinder is just barely visible.
6	Contrast	Grey scale	E. VF (CRT)	VR3 (CONT.)	1) Observing the viewfinder screen, adjust VR 3 to obtain the best gradation of the grey scale image.

SECTION 4
DIAGRAMS AND CIRCUIT BOARDS

4.1 CIRCUIT BOARD LOCATIONS

No.	PWB NAME
01	MAIN
02	Y/C
03	DRUM MDA
05	MIC JACK
06	JACK
07	TRIGGER
08	SENSOR
21	VIDEO-1
22	VIDEO-2
23	ENCODER
24	INDICATOR
25	FAW
26	MIC AMP
30	UPPER DRUM
43	H. DRIVER


UPPER DRUM BOARD
〈30〉
SENSOR BOARD ASS'Y
〈08〉
MAIN BOARD ASS'Y
〈01〉
DRUM MDA
BOARD ASS'Y
〈03〉
INDICATOR BOARD ASS'Y
〈24〉
VIDEO-1
BOARD ASS'Y 〈21〉
H. DRIVER BOARD ASS'Y〈43〉
ENCODER BOARD ASS'Y
〈23〉
VIDEO-2 BOARD ASS'Y 〈22〉
FAW BOARD ASS'Y
〈25〉
JACK BOARD ASS'Y
〈06〉
Y/C
BOARD ASS'Y
〈02〉
OPERATION UNIT
MIC JACK BOARD ASS'Y
〈05〉
MIC AMP BOARD ASS'Y
〈26〉
TRIGGER BOARD ASS'Y
〈07〉

4.2 SCHEMATIC DIAGRAM NOTES

1. ▨ parts are safety related parts. When replacing them, be sure to use the specified parts.
2. Voltage and waveform measurment condition
   - **DECK**

     Voltage : DC-measured with a digital voltmeter during recoding (SP mode) and play back (SP-mode) with alignment tape. Where voltage differ between recoding and playback, the voltage during playback is shown in parenthese. (used to Y/C separator)

     Waveform :

     VIDEO System; Measured with a color bar during recording (SP mode) with alignment tape. (used to Y/C separator)

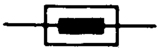
     AUDIO System; Measured with 1 kHz (–8 dBs) during recoding and with alignment tape (1 kHz) during playback.
   - **CAMERA**

     Voltage : Measured with a digital voltmeter in DC range; iris closed. (lens cap on)

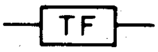
     Waveform : Measured as the grey scale pattern which lighted up brightly is shot in the Full-Auto mode.
3. Unit indications

No units:[Ω]	No units:[μF]	No units :[μH]
K:[kΩ]	P:[pF]	m:[mH]
M:[MΩ]		

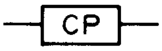
Thermistor



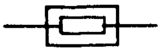
Thermal Fuse

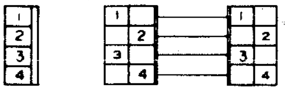


Circuit Protector

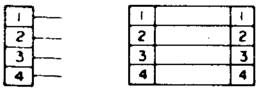


Posistor

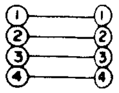




: Connector



: Board in connector



: Direct connection

COUNT UP : Active only at high.

$\overline{\text{COUNT DOWN}}$: Active only at low.

VS : Connected pattern in the board.

MS Abbreviations

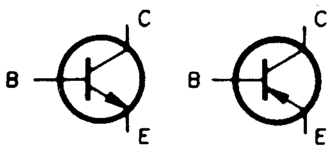
SM

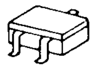
V : Video M : Mechacon

S : Servo A : Audio

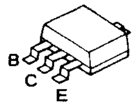
VS : Signal flow from video to servo.

4. Chip transistor



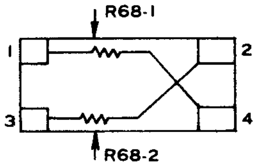


(Standard type)



5. Double chip resistors

These devices contain two resistance elements of differing values. In the example shown in the figure, R68 is comprised of R68-1 between terminals 1 and 4, and R68-2 between terminals 2 and 3.



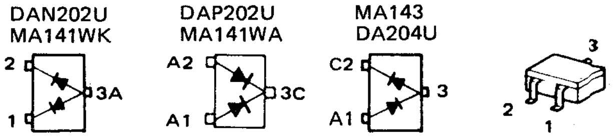
R68 PU59735-472Y103

472 indicates 4.7 kΩ for R68-1

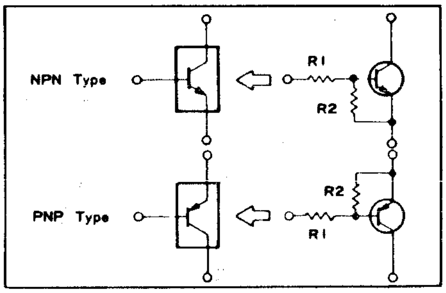
103 indicates 10 kΩ for R68-2

As can be noted from the figure, left-right reversal of the device does not change the connection values. However, turning the device upside-down will result in incorrect connectin.

6. Chip diode



7. Digital transistor



RESISTOR VALUES

JUNCTION	Part No.	R1 (kΩ)	R2 (kΩ)
PNP	DTA124EU	22	22
NPN	DTC144EU	47	47
	DTC124EU	22	22

Note: The digital transistor includes built in resistors. It features small size and high reliability. Both PNP and NPN types are available.

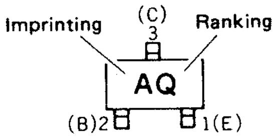
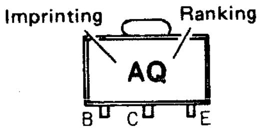
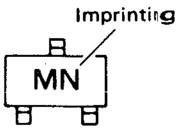
USES: INVERTER, INTERFACE, DRIVER CIRCUITS.

4.3 REPLACING SUBMINIATURE "CHIP" PARTS

1. Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
2. Additional compactness is achieved by using subminiature chip parts for certain circuit elements. When replacing these parts, note the cautions outlined below.

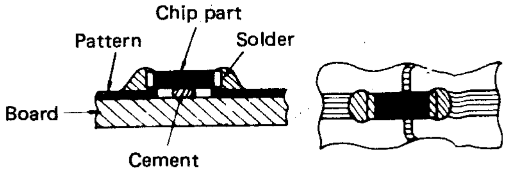
   Chip transistors and diodes used in this model are outlined as follows.

- **Chip transistor and chip diode imprinting**

Transistors				Diodes	
Type	Imprinting	Type	Imprinting	Type	Imprinting
DTA124EU	15	2SB798	DM, DL, DK	DAN202U	N
DTC124EU	25	2SC2412K(S)	BS	DAP202U	P
DTC144EU	26	2SC3931	UB~UD	DA204U	D14
FMC2	C2	2SC3936(BC)	KB, KC	FMN1	N1
FMG1	G1	2SC4081	BQ~QS	IMN10	N10
FMG2	G2	2SC4098(PQ)	AP, AQ	MA141WA	MN
FMU1	U1	2SC4099(NP)	JN, JP	MA141WK	MT
FMW1	W1	2SC4176	B33, B34, B35	MA143	MC
FMW3	W3	2SC4177(56)	L5, L6	MA3075H	7.5H
2SA1036K	HP~HR	2SC4178(34)	F13, F14	MA704	MIK
2SA1532(BC)	EB, EC	2SD1819	YQ~YS	MA716	M1U
2SA1576	FQ, FR	2SJ146	4D	RD7.5M-T1B2	752
2SA1610	Y33, Y34	2SK198P,Q	10P, 10Q	RD7.5MB3	753
2SA1611(56)	M5, M6	2SK620	3N	RD8.2MB2	822
2SB1218(RS)	AR, AS	2SK665	30		
		3SK179	V03		
					

Note ; ( ) refers to Transistor rank.

3. Required tools:
   1) Fine tipped, well insulated soldering "pencil" (with absorbent) (Temp : 130°C ~ 260°C).
   2) Tweezers
   3) Blower type hair dryer.
4. Soldering cautions:
   1) Do not apply heat for more than 3 seconds.
   2) Avoid using a rubbing stroke when soldering.
   3) Discard removed chips; do not reuse them.
   4) Supplementary cementing is not required.
   5) Use care not to scratch or otherwise damage the chips.
5. Soldering conditions:
   1) Resistors, capacitors, etc.



2) Transistors, diodes, etc.

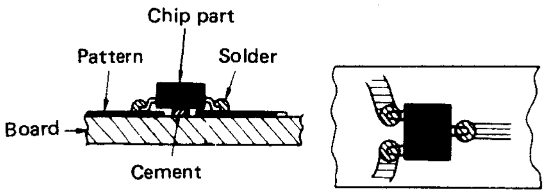


Fig. 4-2

6. Removal (resistors, capacitors, etc.):
   1) Grasp the part with repair jig and melt the solder at one side.

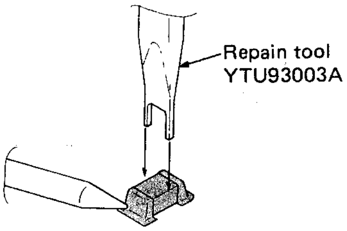


Fig. 4-3

   2) Melt the solder at the other side and remove the part with a twisting motion.

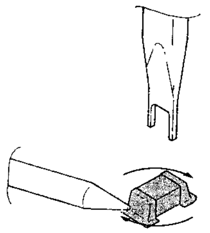


Fig. 4-4

7. Removal (transistors, diodes, etc.):
   1) Melt the solder of one lead.

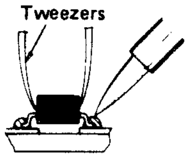


Fig. 4-5

   2) Lift the side of that lead upward.

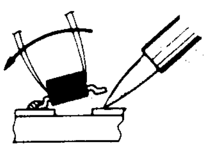


Fig. 4-6

   3) Simultaneously heat solder of the two remaining leads and lift part to remove.

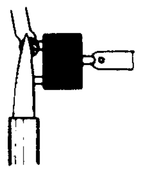


Fig. 4-7

8. Preheating (except for semiconductors):
   Immediately before installing new resistors or capacitors, use a blower type hair dryer and preheat the part for about two minutes at approximately 150°C.

9. Replacement:
   1) Presolder the contact points of the circuit pattern.

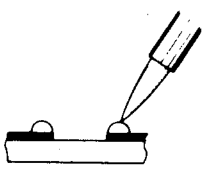


Fig. 4-8

   2) Press the part downward with repair jig and apply the soldering pencil as indicated in the figure.

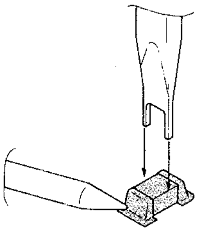


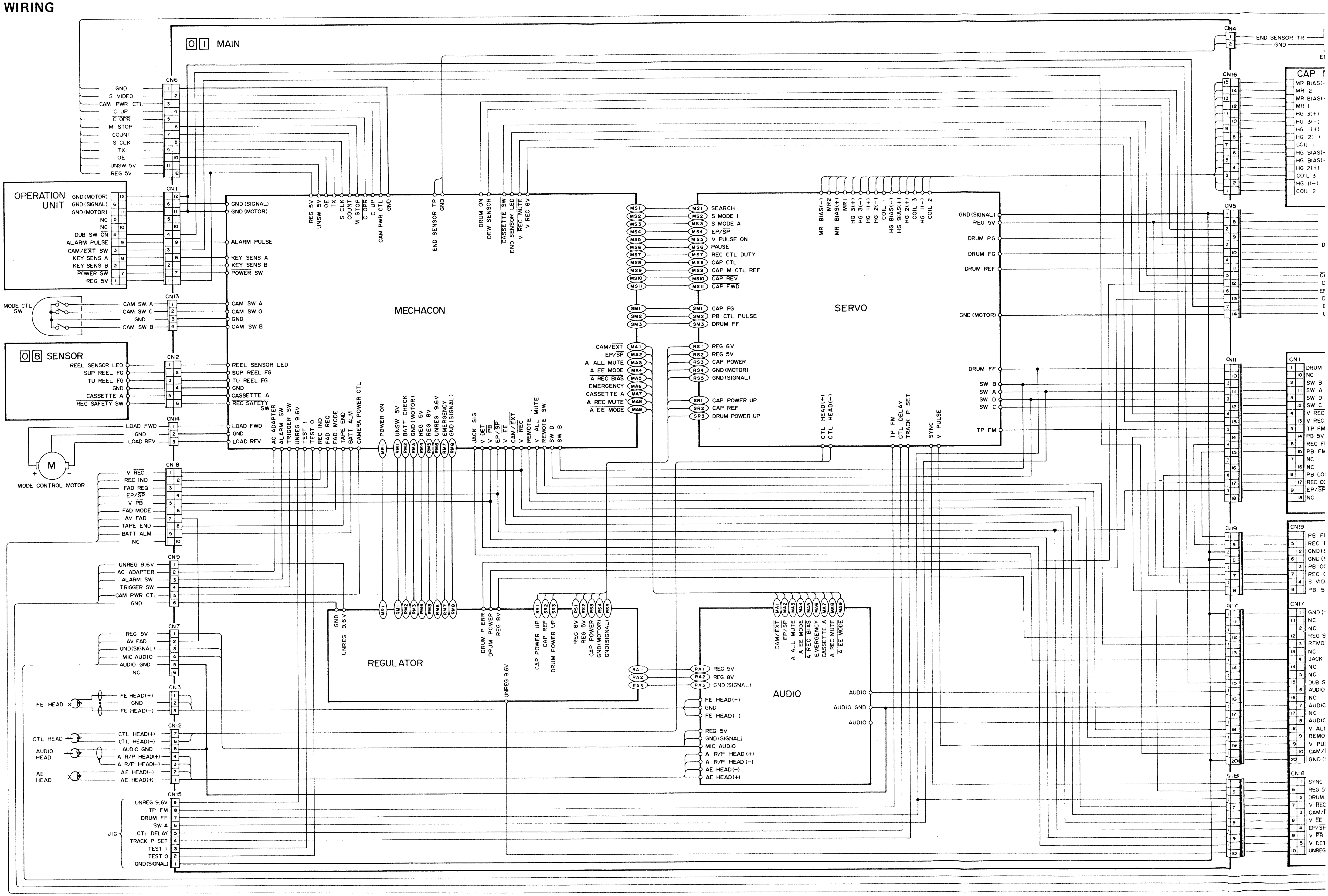
Fig. 4-9

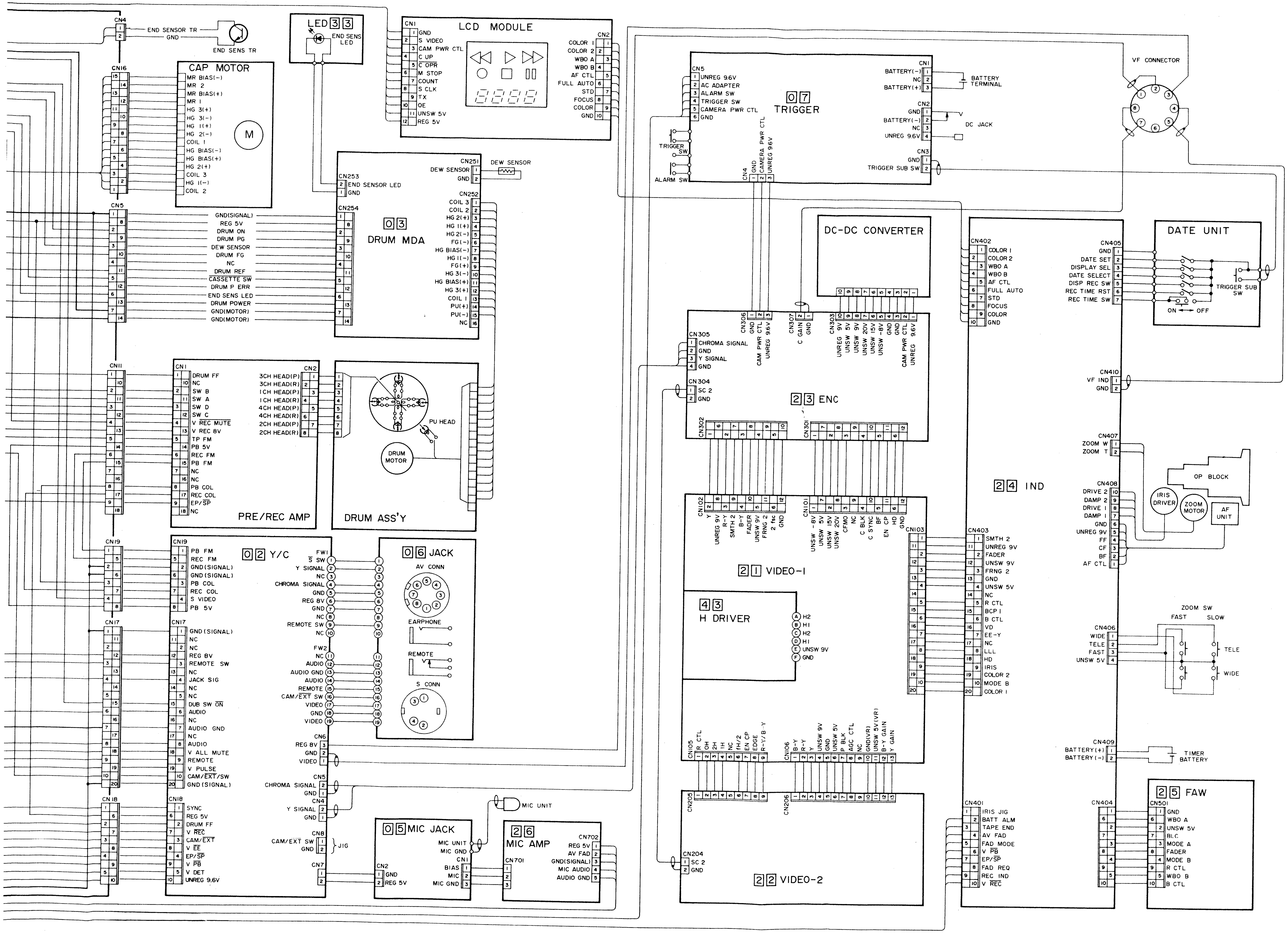
4.4 KEY TO ABBREVIATIONS

A	AC	: Alternating Current
	ACC	: Automatic Color Control
	A/CTL	: Audio/Control
	ADC	: Analog to Digital Converter
	ADD	: Adder
	ADJ	: Adjustment
	AE	: Audio Erase
	AEF	: Automatic Editing Function
	AF	**: Auto Focus**
	AFC	: Automatic Frequency Control
	AFT	: Automatic Fine Tuning
	AGC	: Automatic Gain Control
	AH	: Audio Head
	AL	**: After Loading, Allways**
	ALC	: Automatic Light Compensation Automatic Level Control
	ALM	: Alarm
	ALU	: Arithmetic Logic Unit
	AM	: Amplitude Modulation
	AMP	: Amplifier
	ANT	: Antenna
	APC	: Automatic Pedestal Control Automatic Phase Control
	APL	: Average Picture Level
	A.S.M	: Audio/Servo/Mechacon
	ASS'Y	: Assembly
	ATT	: Attenuator
	AUD	: Audio
	AUTO	: Automatic
	AUX	: Auxiliary
B	B	**: Base, Blue**
	BAL	: Balance
	BATT	: Battery
	BBD	: Bucket Brigade Device
	BCD	: Binary Coded Decimal
	BEG	: Beginning
	BF	**: Behind Focus**
	BFP	: Burst Flag Pulse
	BPF	**: Band Pass Filter**
	BIT	: Binary Digit
	BLK	: Black, Blanking
	BLU	: Blue
	BNC	: Bayonet Connector
	BOT	: Beginning of Tape
	BPF	: Bandpass Filter
	BRK	: Brake
	BRN	: Brown
	BRT	: Brightness
	BT	: Band Tuning
	BUFF	: Buffer
	BW or B/W	: Black and White
C	C	**: Capacitance, Collector, Color, Character**
	CA	**: Camera**
	CAL	: Calibration
	CAP	: Capstan, Capacitor
	CAR	: Carrier
	CARR	: Carrier
	CASS	: Cassette
	CC	: Cassette Compartment
	CCD	: Charge Coupled Device
	CCT	: Circuit
	CdS	: Cadmium Sulphide
	CD	: Count Down
	CE	: Chip Enable
	CF	**: Ceramic Filter, Color Frame, Correct Focus**
	CH	: Channel
	CHG	: Charge
	CHROMA	: Chrominance
	CLK	: Clock
	CLR	: Clear
	CMD	: Command
	CMOS	: Complementary Metal Oxide Semiconductor
	CNT	: Count, Counter
	COL	: Color
	COM	: Common
	COMB	: Combination Comb Filter
	COMP	: Comparator Composite Compensation
	CONN	: Connector
	CONV	: Converter
	CP	: Circuit Protector Clamp Pulse
	CPC	: Capstan Phase Control
	CPU	: Central Processing Unit
	CTC	: Crosstalk Cancel
	CTL	: Control
D	D	: Drum, Digital, Diode, Drain
	DAC	: Digital to Analog Converter
	dB	: Decibel
	DC	: Direct Current
	DD	: Direct Drive
	DEC	: Decoder
	DEMOD	: Demodulator
	DEMUX	: Demultiplexer
	DET	: Detector
	DEV	: Deviation
	DFRS	: Drum Free Running Stop
	DG	: Differential Gain
	DIF	: Differential
	DISCR	: Discriminator
	DL	: Delay Line
	DOC	: Dropout Compensator
	DOD	: Drop Out Detector
	DP	: Differential Phase
	DPC	: Drum Phase Control
	DYAC	: Dynamic Aperture Control
E	E	: Edit, Emitter
	EDP	: Electronic Data Processing
	E-E	: Electric to Electric
	EF	: Emitter-Follower
	EMP	: Emphasis
	EN	: Enable
	ENC	: Encoder
	ENV	: Envelope
	EOT	: End of Tape
	EP	: Extended Play
	EQ	: Equalizer
	ES	: Electronic Switch
	ESNS	: End Sensor
	EXP	: Expander
	EXT	: External
F	F	: Farad, Fuse
	F ADV	: Frame Advance
	FDP	: Fluorescent Display Panel
	FE	: Full Erase
	FET	: Field Effect Transistor
	FF	**: Fast Forward, Front Focus** Flipflop
	FG	: Frequency Generator
	FM	: Frequency Modulation
	FR	: Full Recording, Frame, Fusible Resistor
	FREQ	: Frequency
	F-V CONV	: Frequency to Voltage Converter
	FWD	: Forward
	FWD S	: Forward Search
G	G	: Green, Gate, Grid
	GEN	: Generator
	GND	: Ground
	GRN	: Green
	GRY	: Gray
H	H	: High, Henry, Hour
	HBF	: Horizontal Burst Flag
	HD	: Horizontal Drive
	HPF	: Highpass Filter
	Hz	: Herz

I	IC	: Integrated Circuit
	ID	: Identification (Pulse)
	IF	: Intermediate Frequency
	IFR	: Infrared
	IFT	: Intermediate Frequency Transformer
	IND	: Indicator
	INH	: Inhibit
	INS	: Insert
	INT	: Internal, Interrupt
	INV	: Inverter, Interleave
	I/O	: Input/Output
	IR	: Infrared
L	L	: Low, Left
	LCD	: Liquid Crystal Display
	LED	: Light Emitting Diode
	LIM	: Limiter
	LIN	: Linearity
	LLD	: Low Light Detector
	LOAD	: Loading (Cassette)
	LP	: Long Play
	LPF	: Lowpass Filter
	LSB	: Lower Sideband
M	M	: Motor, Mega
	MAX	: Maximum
	MDA	: Motor Drive Amplifier
	MECHACON	: Mechanism Control
	MIC	: Microphone
	MIN	: Minimum
	MIX	: Mixer, Mixing
	MMV	: Monostable Multivibrator
	MNOS	: Metal Nitride Oxide Semiconductor
	MOD	: Modulation, Modulator
	MODEM	: Modulator-Demodulator
	MON	: Monitor
	MOS	: Metal Oxide Semiconductor
	MPX	: Multiplexer, Multiplex
	MS	: Mode Select
	MUT	: Muting
N	NAND	: Not-And
	NC	: Not Connected, Normally Closed
	NFB	: Negative Feedback
	NLN	: Non-Linear
	NO	: Normally Open
	NOR	: Normal, Not-Or
	NR	: Noise Reduction
O	OP	: Operation
	OPAMP	: Operational Amplifier
	ORG	: Orange
	OSC	: Oscillator
P	PB	: Playback
	PC	: Photocoupler, Pulse Counter
	PCM	: Pulse Code Modulation
	PG	: Pulse Generator
	PGM	: Program
	PI	: Photo Interrupter
	PIC	: Picture Control
	PIF	: Picture Intermediate Frequency
	PLA	: Programmable Logic Array
	PLL	: Phase Locked Loop
	PNK	: Pink
	POS	: Position
	p-p	: Peak-to-Peak
	PR	: Pinch Roller
	PREAMP	: Preamplifier
	PRL	: Preroll
	P/S	: Pause/Still
	PSC	: Pulse Swallowing Control
	PU	: Pickup
	PUT	: Programmable Unijunction Transistor
	PWB	: Printed Wiring Board
	PWM	: Pulse Width Modulation
	PWR	: Power
Q	Q	: Quality Factor
R	R	: Red, Right
	RA	: Resistor Array
	RAM	: Random Access Memory
	REC	: Recording
	REF	: Reference
	REG	: Regulated, Regulator
	REM	: Remote
	REMOCON	: Remote Control (Unit)
	REV	: Reverse
	REV S	: Reverse Search
	REW	: Rewind
	RF	: Radio Frequency
	ROM	: Read Only Memory
	R/P	: Record/Playback
	RPT	: Repeat
	RS FF	: RS Flipflop
	RST	: Reset
	RT	: Rotary Transformer
	RUN	: Running
	RY	: Relay
S	SAW	: Sawtooth, Surface Acoustic Wave
	SC	: Subcarrier, Simulcast
	SCH	: Search
	SEL	: Select, Selector
	SENS	: Sensor
	SEP	: Separator
	SF	: Source Follower
	SFF	: Short Fast Forward
	SIF	: Sound Intermediate Frequency
	SN	: Signal to Noise Ratio
	SOL	: Solenoid
	SOS	: Sound on Sound
	SP	: Standard Play
	SR	: Supply Reel
	SREW	: Short Rewind
	S/S	: Slow/Still
	SSG	: Sync Signal Generator
	SSNS	: Start Sensor
	STD	: Strobe Data, Standard
	SUP	: Supply
	SW	: Switch
	SWD	: Switched
	SYNC	: Synchronization
T	TAL	: Tally
	TBC	: Time Base Corrector
	TC	: Tension Control, Time Code
	TEN	: Tension
	TF	: Thermal Fuse
	TIM	: Timing
	TK	: Tracking
	TNR	: Tuner
	TP	: Test Point
	TPZD	: Trapezoid
	TR	: Transistor, Trimmer
	TRANS	: Transformer
	TU	: Take-up
U	UL	: Unloading
	UNREG	: Unregulated
	UNSW	: Unswitched
V	V	: Vertical, Volt
	VACT	: Video Action
	VCO	: Voltage Controlled Oscillator
	VD	: Vertical Drive
	VIF	: Video Intermediate Frequency
	VLT	: Violet
	VR	: Variable Resistor
	VS	: Video and Sync
	VSCH	: Variable Search
	VV	: Video to Video
	VXO	: Variable Crystal Oscillator
W	W	: Watt
	WARN	: Warning
	W & D	: White and Dark
	WHT	: White
	WV	: Working Voltage
X	XTAL	: Crystal
Y	Y	: Luminance
	YEL	: Yellow

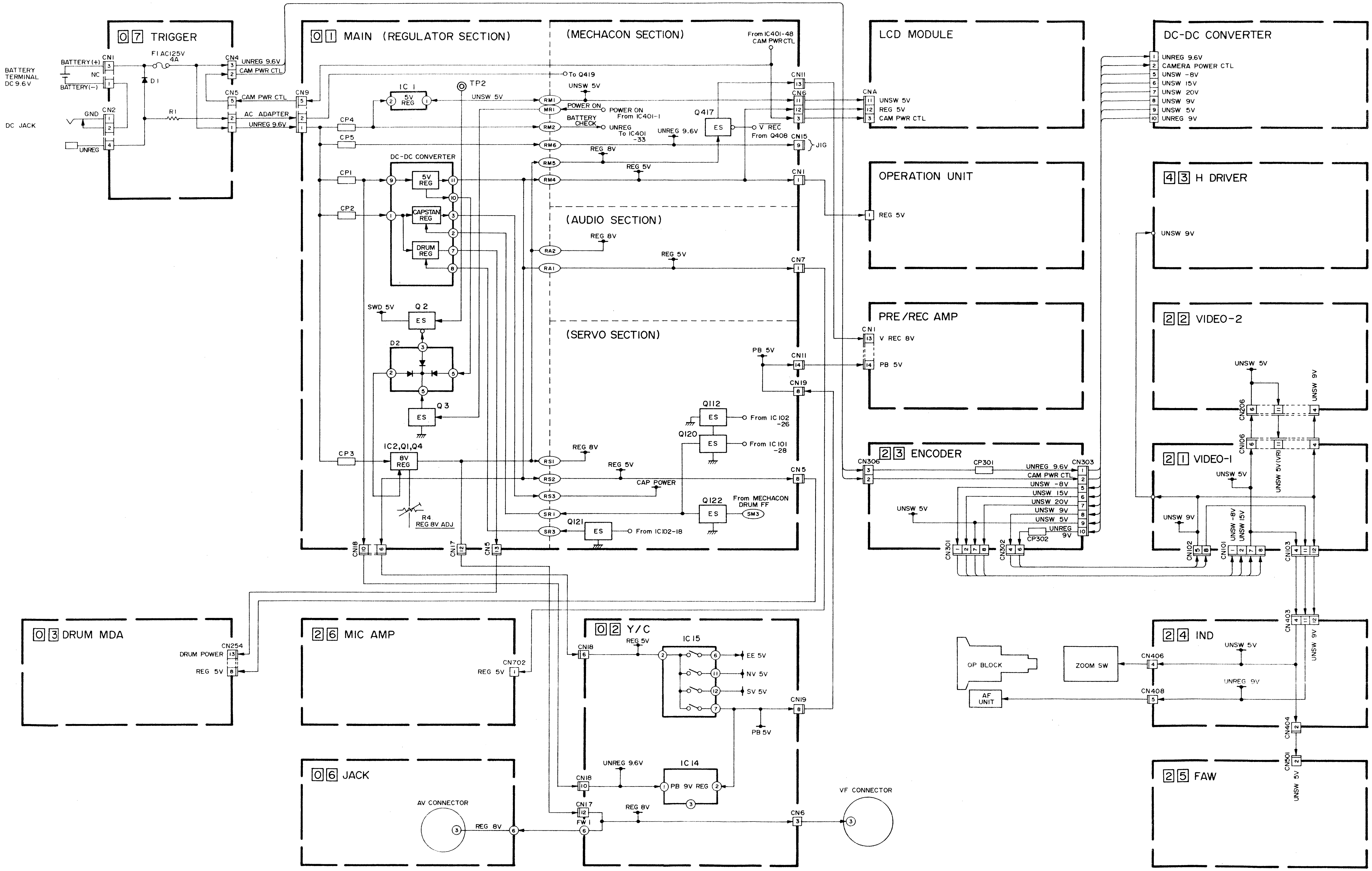
4.5 OVERALL WIRING


0 1 MAIN
CN6
GND
S VIDEO
CAM PWR CTL
C UP
C OPR
M STOP
COUNT
S CLK
TX
OE
UNSW 5V
REG 5V
OPERATION UNIT
GND (MOTOR)
GND (SIGNAL)
GND (MOTOR)
NC
NC
DUB SW ON
ALARM PULSE
CAM/EXT SW
KEY SENS A
KEY SENS B
POWER SW
REG 5V
CN1
CN13
MODE CTL SW
CAM SW A
CAM SW C
GND
CAM SW B
0 8 SENSOR
REEL SENSOR LED
SUP REEL FG
TU REEL FG
GND
CASSETTE A
REC SAFETY SW
CN2
CN14
LOAD FWD
GND
LOAD REV
M
MODE CONTROL MOTOR
CN8
V REC
REC IND
FAD REQ
EP/SP
V PB
FAD MODE
AV FAD
TAPE END
BATT ALM
NC
CN9
UNREG 9.6V
AC ADAPTER
ALARM SW
TRIGGER SW
CAM PWR CTL
GND
CN7
REG 5V
AV FAD
GND(SIGNAL)
MIC AUDIO
AUDIO GND
NC
CN3
FE HEAD
FE HEAD(+)
GND
FE HEAD(−)
CN12
CTL HEAD
AUDIO HEAD
AE HEAD
CTL HEAD(+)
CTL HEAD(−)
AUDIO GND
A R/P HEAD(+)
A R/P HEAD(−)
AE HEAD(−)
AE HEAD(+)
CN15
JIG
UNREG 9.6V
TP FM
DRUM FF
SW A
CTL DELAY
TRACK P SET
TEST I
TEST O
GND(SIGNAL)
MECHACON
GND (SIGNAL)
GND (MOTOR)
ALARM PULSE
KEY SENS A
KEY SENS B
POWER SW
CAM SW A
CAM SW O
GND
CAM SW B
REEL SENSOR LED
SUP REEL FG
TU REEL FG
GND
CASSETTE A
REC SAFETY SW
LOAD FWD
GND
LOAD REV
REG 5V
UNSW 5V
OE
TX
S CLK
COUNT
M STOP
C OPR
C UP
CAM PWR CTL
GND
END SENSOR TR
GND
DRUM ON
DEW SENSOR
CASSETTE SW
END SENSOR LED
V REC MUTE
V REC 8V
AC ADAPTER
ALARM SW
TRIGGER SW
UNREG 9.6V
TEST I
TEST O
REC IND
FAD REQ
FAD MODE
TAPE END
BATT ALM
CAMERA POWER CTL
POWER ON
UNSW 5V
BATT CHECK
GND (MOTOR)
REG 5V
REG 8V
UNREG 9.6V
EMERGENCY
GND (SIGNAL)
JACK SIG
V DET
V PB
EP/SP
V EE
CAM/EXT
V REC
REMOTE
V ALL MUTE
REMOTE SW
SW D
SW B
MR1
RM1
RM2
RM3
RM4
RM5
RM6
RM7
RM8
CAM/EXT
EP/SP
A ALL MUTE
A EE MODE
A REC BIAS
EMERGENCY
CASSETTE A
A REC MUTE
A EE MODE
MA1
MA2
MA3
MA4
MA5
MA6
MA7
MA8
MA9
MS1
MS2
MS3
MS4
MS5
MS6
MS7
MS8
MS9
MS10
MS11
SM1
SM2
SM3
RS1
RS2
RS3
RS4
RS5
SR1
SR2
SR3
SERVO
SEARCH
S MODE I
S MODE A
EP/SP
V PULSE ON
PAUSE
REC CTL DUTY
CAP CTL
CAP M CTL REF
CAP REV
CAP FWD
CAP FG
PB CTL PULSE
DRUM FF
REG 8V
REG 5V
CAP POWER
GND (MOTOR)
GND (SIGNAL)
CAP POWER UP
CAP REF
DRUM POWER UP
MR BIAS(−)
MR2
MR BIAS(+)
MR1
HG 3(+)
HG 3(−)
HG 1(+)
HG 2(−)
COIL 1
HG BIAS(−)
HG BIAS(+)
HG 2(+)
COIL 3
HG 1(−)
COIL 2
GND (SIGNAL)
REG 5V
DRUM PG
DRUM FG
DRUM REF
GND (MOTOR)
DRUM FF
SW B
SW A
SW D
SW C
TP FM
CTL HEAD(+)
CTL HEAD(−)
TP FM
CTL DELAY
TRACK P SET
SYNC
V PULSE
REGULATOR
GND
UNREG 9.6V
DRUM P ERR
DRUM POWER
REG 8V
UNREG 9.6V
CAP POWER UP
CAP REF
DRUM POWER UP
REG 8V
REG 5V
CAP POWER
GND(MOTOR)
GND(SIGNAL)
RA1
RA2
RA3
AUDIO
REG 5V
REG 8V
GND (SIGNAL)
FE HEAD(+)
GND
FE HEAD(−)
REG 5V
GND (SIGNAL)
MIC AUDIO
A R/P HEAD (+)
A R/P HEAD (−)
AE HEAD(−)
AE HEAD(+)
AUDIO
AUDIO GND
AUDIO
CN4
END SENSOR TR
GND
CN16
CAP
MR BIAS(
MR 2
MR BIAS(
MR 1
HG 3(+)
HG 3(−)
HG 1(+)
HG 2(−)
COIL 1
HG BIAS(
HG BIAS(
HG 2(+)
COIL 3
HG 1(−)
COIL 2
CN5
CN11
CN1
DRUM
NC
SW B
SW A
SW D
SW C
V REC
V REC
TP FM
PB 5V
REC F
PB FM
NC
NC
PB CO
REC CO
EP/SP
NC
CN19
PB F
REC
GND(
GND(
PB CO
REC C
S VID
PB 5
CN17
GND
NC
NC
REG 8
REMO
NC
JACK
NC
NC
DUB S
AUDIO
NC
AUDIO
NC
AUDIO
V ALL
REMO
V PUL
CAM/
GND
CN18
SYNC
REG 5
DRUM
V REC
CAM/
V EE
EP/SP
V PB
V DET
UNREG


CN4
END SENSOR TR
GND
END SENS TR
LED 3 3
END SENS LED
CN16
CAP MOTOR
MR BIAS(-)
MR 2
MR BIAS(+)
MR 1
HG 3(+)
HG 3(-)
HG 1(+)
HG 2(-)
COIL 1
HG BIAS(-)
HG BIAS(+)
HG 2(+)
COIL 3
HG 1(-)
COIL 2
M
LCD MODULE
CN1
GND
S VIDEO
CAM PWR CTL
C UP
C OPR
M STOP
COUNT
S CLK
TX
OE
UNSW 5V
REG 5V
CN2
COLOR 1
COLOR 2
WBO A
WBO B
AF CTL
FULL AUTO
STD
FOCUS
COLOR
GND
CN5
GND(SIGNAL)
REG 5V
DRUM ON
DRUM PG
DEW SENSOR
DRUM FG
NC
DRUM REF
CASSETTE SW
DRUM P ERR
END SENS LED
DRUM POWER
GND(MOTOR)
GND(MOTOR)
CN251
DEW SENSOR
GND
CN253
END SENSOR LED
GND
CN254
CN252
0 3
DRUM MDA
COIL 3
COIL 2
HG 2(+)
HG 1(+)
HG 2(-)
FG(-)
HG BIAS(-)
HG 1(-)
FG(+)
HG 3(-)
HG BIAS(+)
HG 3(+)
COIL 1
PU(+)
PU(-)
NC
CN11
CN1
DRUM FF
NC
SW B
SW A
SW D
SW C
V REC MUTE
V REC 8V
TP FM
PB 5V
REC FM
PB FM
NC
NC
PB COL
REC COL
EP/SP
NC
CN2
3CH HEAD(P)
3CH HEAD(R)
1CH HEAD(P)
1CH HEAD(R)
4CH HEAD(P)
4CH HEAD(R)
2CH HEAD(P)
2CH HEAD(R)
PRE/REC AMP
PU HEAD
DRUM MOTOR
DRUM ASS'Y
CN19
PB FM
REC FM
GND(SIGNAL)
GND(SIGNAL)
PB COL
REC COL
S VIDEO
PB 5V
0 2 Y/C
FW1
S SW
Y SIGNAL
NC
CHROMA SIGNAL
GND
REG 8V
GND
NC
REMOTE SW
NC
FW2
NC
AUDIO
AUDIO GND
AUDIO
REMOTE
CAM/EXT SW
VIDEO
GND
VIDEO
CN17
GND(SIGNAL)
NC
NC
REG 8V
REMOTE SW
NC
JACK SIG
NC
NC
DUB SW ON
AUDIO
NC
AUDIO GND
NC
AUDIO
V ALL MUTE
REMOTE
V PULSE
CAM/EXT/SW
GND(SIGNAL)
CN6
REG 8V
GND
VIDEO
CN5
CHROMA SIGNAL
GND
CN4
Y SIGNAL
GND
CN8
CAM/EXT SW
GND
JIG
CN7
CN18
SYNC
REG 5V
DRUM FF
V REC
CAM/EXT
V EE
EP/SP
V PB
V DET
UNREG 9.6V
0 6 JACK
AV CONN
EARPHONE
REMOTE
S CONN
0 5 MIC JACK
MIC UNIT
MIC GND
CN1
BIAS
MIC
MIC GND
CN2
GND
REG 5V
MIC UNIT
2 6
MIC AMP
CN701
CN702
REG 5V
AV FAD
GND(SIGNAL)
MIC AUDIO
AUDIO GND
CN5
UNREG 9.6V
AC ADAPTER
ALARM SW
TRIGGER SW
CAMERA PWR CTL
GND
0 7
TRIGGER
CN1
BATTERY(-)
NC
BATTERY(+)
BATTERY TERMINAL
CN2
GND
BATTERY(-)
NC
UNREG 9.6V
DC JACK
CN3
GND
TRIGGER SUB SW
TRIGGER SW
ALARM SW
CN4
GND
CAMERA PWR CTL
UNREG 9.6V
VF CONNECTOR
DC-DC CONVERTER
CN306
GND
CAM PWR CTL
UNREG 9.6V
CN307
C GAIN
GND
CN303
UNREG 9V
UNSW 5V
UNSW 9V
UNSW 20V
UNSW 15V
UNSW -8V
GND
GND
CAM PWR CTL
UNREG 9.6V
CN305
CHROMA SIGNAL
GND
Y SIGNAL
GND
CN304
SC 2
GND
2 3 ENC
CN302
CN301
CN102
Y
UNREG 9V
R-Y
SMTH 2
B-Y
FADER
UNSW 9V
FRNG 2
2 fsc
GND
CN101
UNSW -8V
UNSW 5V
UNSW 15V
UNSW 20V
CFMO
NC
C BLK
C SYNC
BF
EN CP
HD
GND
CN103
2 1 VIDEO-1
4 3
H DRIVER
H2
H1
H2
H1
UNSW 9V
GND
CN105
R CTL
OH
2H
1H
NC
fH/2
EN CP
EDGE
R-Y/B-Y
CN106
B-Y
R-Y
Y
UNSW 9V
GND
UNSW 5V
P BLK
AGC CTL
NC
GND(VR)
UNSW 5V(VR)
B-Y GAIN
Y GAIN
CN205
CN206
CN204
SC 2
GND
2 2 VIDEO-2
CN402
COLOR 1
COLOR 2
WBO A
WBO B
AF CTL
FULL AUTO
STD
FOCUS
COLOR
GND
CN405
GND
DATE SET
DISPLAY SEL
DATE SELECT
DISP REC SW
REC TIME RST
REC TIME SW
DATE UNIT
TRIGGER SUB SW
ON ← OFF
CN410
VF IND
GND
CN407
ZOOM W
ZOOM T
OP BLOCK
CN408
DRIVE 2
DAMP 2
DRIVE 1
DAMP 1
GND
UNREG 9V
FF
CF
BF
AF CTL
IRIS DRIVER
ZOOM MOTOR
AF UNIT
2 4 IND
CN403
SMTH 2
UNREG 9V
FADER
UNSW 9V
FRNG 2
GND
UNSW 5V
NC
R CTL
BCP 1
B CTL
VD
EE-Y
NC
LLL
HD
IRIS
COLOR 2
MODE B
COLOR 1
ZOOM SW
FAST
SLOW
CN406
WIDE
TELE
FAST
UNSW 5V
TELE
WIDE
CN409
BATTERY(+)
BATTERY(-)
TIMER BATTERY
CN401
IRIS JIG
BATT ALM
TAPE END
AV FAD
FAD MODE
V PB
EP/SP
FAD REQ
REC IND
V REC
CN404
2 5 FAW
CN501
GND
WBO A
UNSW 5V
BLC
MODE A
FADER
MODE B
R CTL
WBO B
B CTL

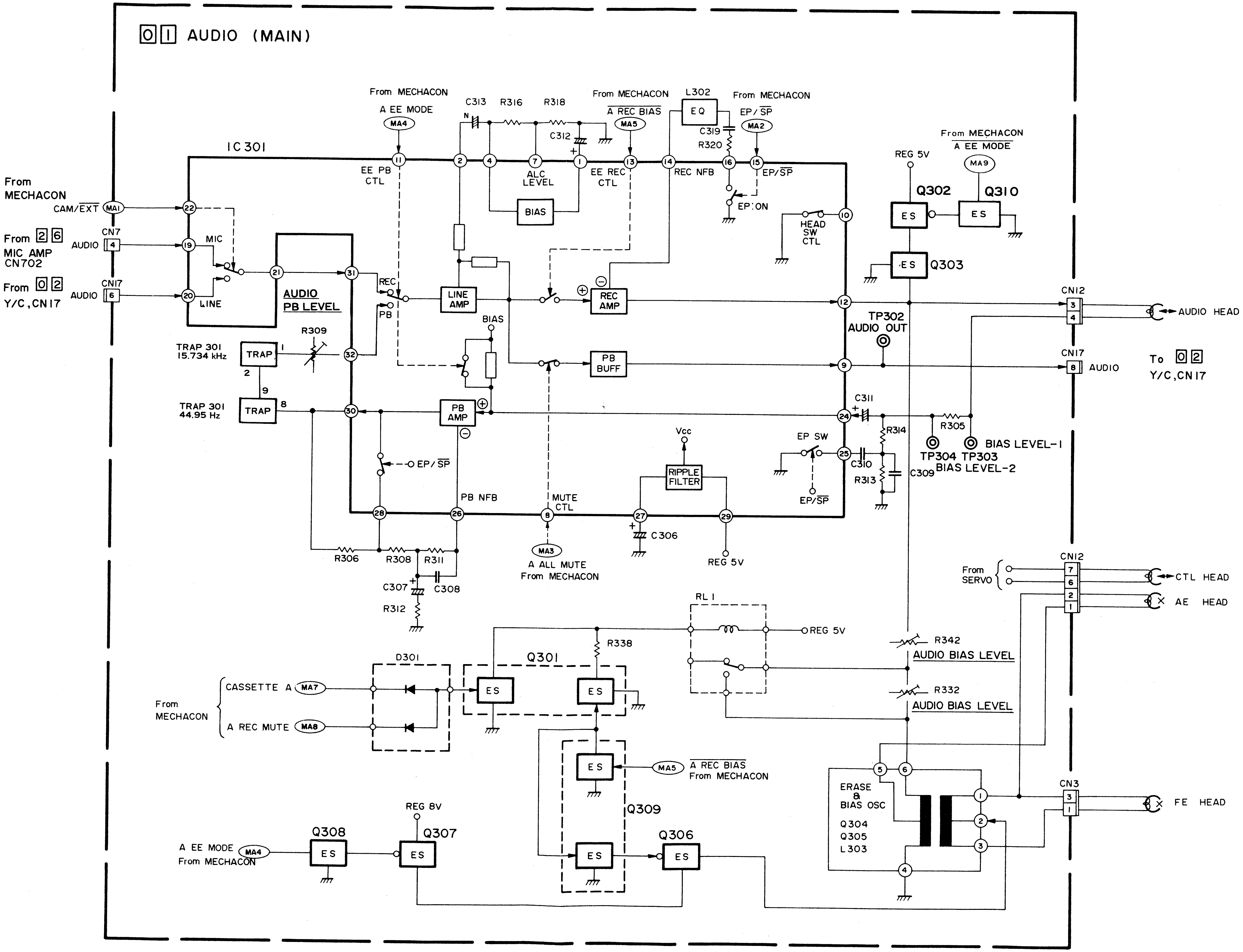
NO.	PWB NAME
43	H DRIVER
33	LED
26	MIC AMP
25	FULL AUTO WHITE
24	INDICATOR
23	ENCODER
22	VIDEO-2
21	VIDEO-1
08	SENSOR
07	TRIGGER
06	JACK
05	MIC JACK
03	DRUM MDA
02	Y/C
01	MAIN

4.6 POWER SYSTEM BLOCK DIAGRAM



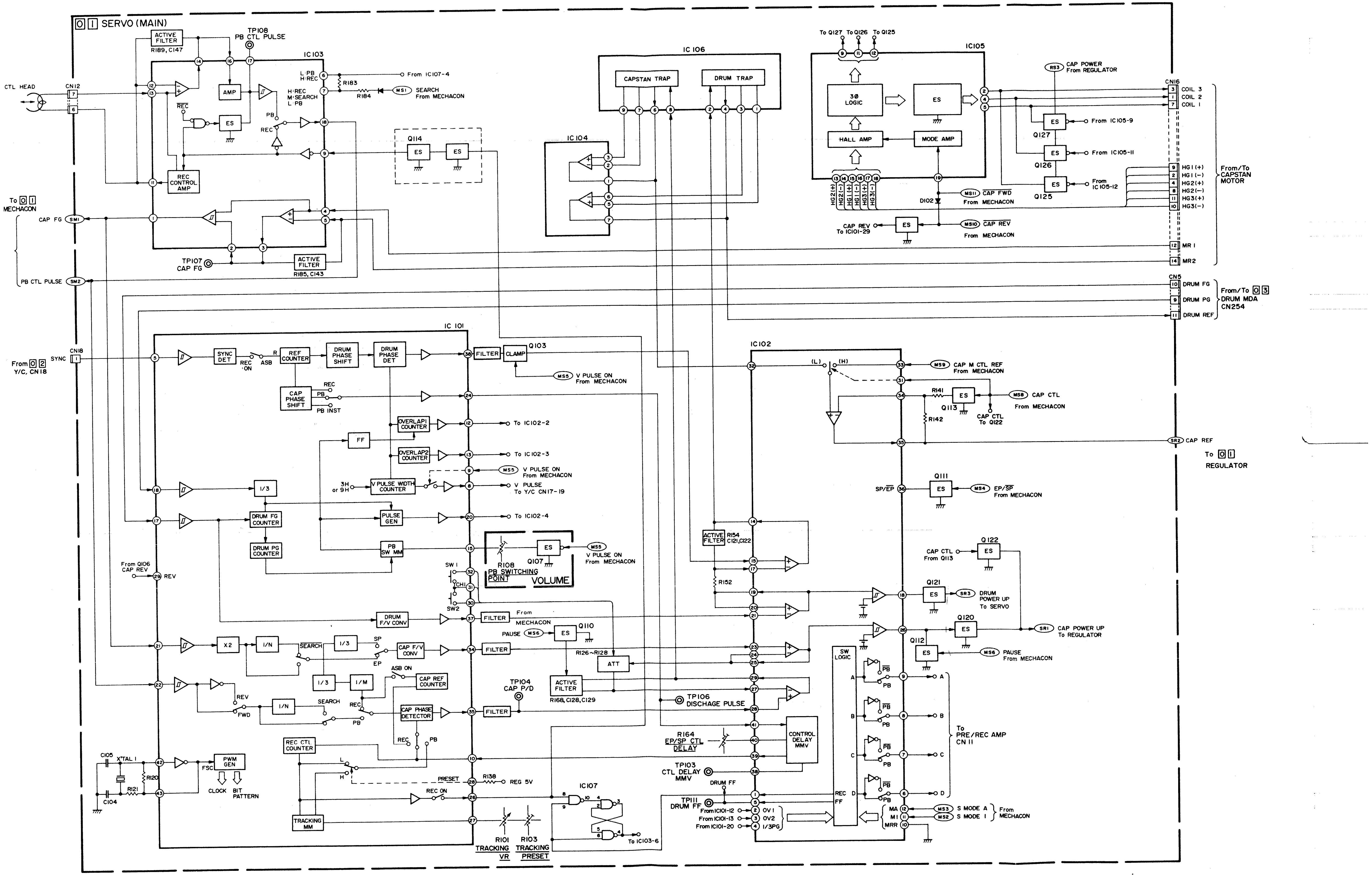
07 TRIGGER
BATTERY TERMINAL DC 9.6V
BATTERY (+)
NC
BATTERY (−)
CN1
CN2
DC JACK
GND
UNREG
F1 AC125V 4A
D1
R1
CN4
UNREG 9.6V
CAM PWR CTL
CN5
CAM PWR CTL
AC ADAPTER
UNREG 9.6V
01 MAIN (REGULATOR SECTION)
(MECHACON SECTION)
(AUDIO SECTION)
(SERVO SECTION)
CN9
CP4
CP5
CP1
CP2
CP3
IC1
5V REG
TP2
UNSW 5V
DC-DC CONVERTER
5V REG
CAPSTAN REG
DRUM REG
SWD 5V
Q2
ES
D2
Q3
IC2,Q1,Q4
8V REG
R4
REG 8V ADJ
To Q419
POWER ON
From IC401-1
BATTERY CHECK
UNREG
To IC401 -33
UNREG 9.6V
Q417
V REC
From Q408
From IC401-48 CAM PWR CTL
CN11
CN6
CN15
JIG
CN1
CN7
CN19
CN5
REG 8V
REG 5V
RM1
MR1
RM2
RM6
RM5
RM4
RA2
RA1
RS1
RS2
RS3
SR1
SR3
PB 5V
Q112
From IC102 -26
Q120
From IC101 -28
CAP POWER
Q122
From MECHACON DRUM FF
SM3
Q121
From IC102-18
CN18
CN17
LCD MODULE
CNA
UNSW 5V
REG 5V
CAM PWR CTL
OPERATION UNIT
REG 5V
PRE/REC AMP
V REC 8V
PB 5V
23 ENCODER
CN306
CP301
CN303
UNREG 9.6V
CAM PWR CTL
UNSW −8V
UNSW 15V
UNSW 20V
UNSW 9V
UNSW 5V
UNREG 9V
CP302
CN301
CN302
DC-DC CONVERTER
UNREG 9.6V
CAMERA POWER CTL
UNSW −8V
UNSW 15V
UNSW 20V
UNSW 9V
UNSW 5V
UNREG 9V
43 H DRIVER
UNSW 9V
22 VIDEO-2
UNSW 5V
UNSW 9V
CN206
CN106
21 VIDEO-1
UNSW 5V(VR)
UNSW −8V
UNSW 15V
CN102
CN101
CN103
24 IND
CN403
CN406
CN408
UNREG 9V
OP BLOCK
ZOOM SW
AF UNIT
CN404
CN501
25 FAW
03 DRUM MDA
CN254
DRUM POWER
REG 5V
26 MIC AMP
CN702
REG 5V
02 Y/C
IC15
EE 5V
NV 5V
SV 5V
IC14
PB 9V REG
FW1
06 JACK
AV CONNECTOR
REG 8V
VF CONNECTOR

4.7 AUDIO BLOCK DIAGRAM



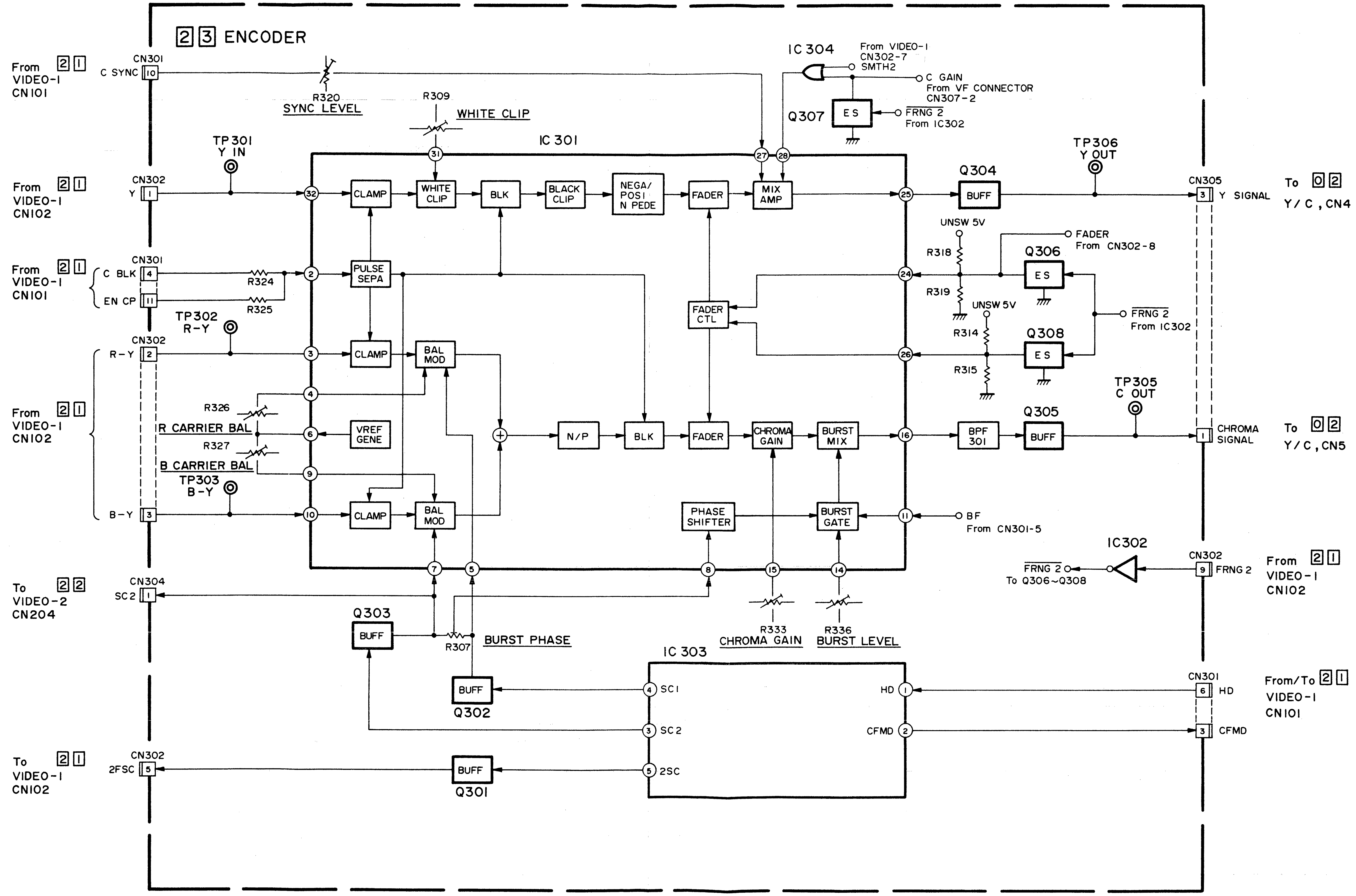
01 AUDIO (MAIN)
IC301
From MECHACON
CAM/EXT MA1
From 26 MIC AMP CN702
CN7 AUDIO 4
From 02 Y/C, CN17
CN17 AUDIO 6
MIC
LINE
AUDIO PB LEVEL
REC
PB
R309
TRAP 301 15.734 kHz
TRAP 301 44.95 Hz
TRAP
From MECHACON A EE MODE MA4
EE PB CTL
C313
R316
R318
C312
ALC LEVEL
BIAS
LINE AMP
From MECHACON A REC BIAS MA5
EE REC CTL
REC AMP
L302
EQ
C319
R320
From MECHACON EP/SP MA2
REC NFB
EP/SP
EP:ON
HEAD SW CTL
PB BUFF
PB AMP
EP/SP
PB NFB
MUTE CTL
MA3 A ALL MUTE From MECHACON
R306
R308
R311
C307
C308
R312
Vcc
RIPPLE FILTER
C306
REG 5V
EP SW
EP/SP
C310
R313
R314
C309
C311
R305
TP302 AUDIO OUT
TP304 TP303 BIAS LEVEL-1 BIAS LEVEL-2
REG 5V
Q302
Q310
Q303
ES
From MECHACON A EE MODE MA9
CN12
AUDIO HEAD
CN17 AUDIO
To 02 Y/C, CN17
From SERVO
CTL HEAD
AE HEAD
RL1
REG 5V
R342 AUDIO BIAS LEVEL
R332 AUDIO BIAS LEVEL
R338
D301
Q301
From MECHACON CASSETTE A MA7
A REC MUTE MA8
MA5 A REC BIAS From MECHACON
Q309
Q306
REG 8V
Q308
Q307
A EE MODE MA4 From MECHACON
ERASE & BIAS OSC Q304 Q305 L303
CN3
FE HEAD

4.8 SERVO BLOCK DIAGRAM

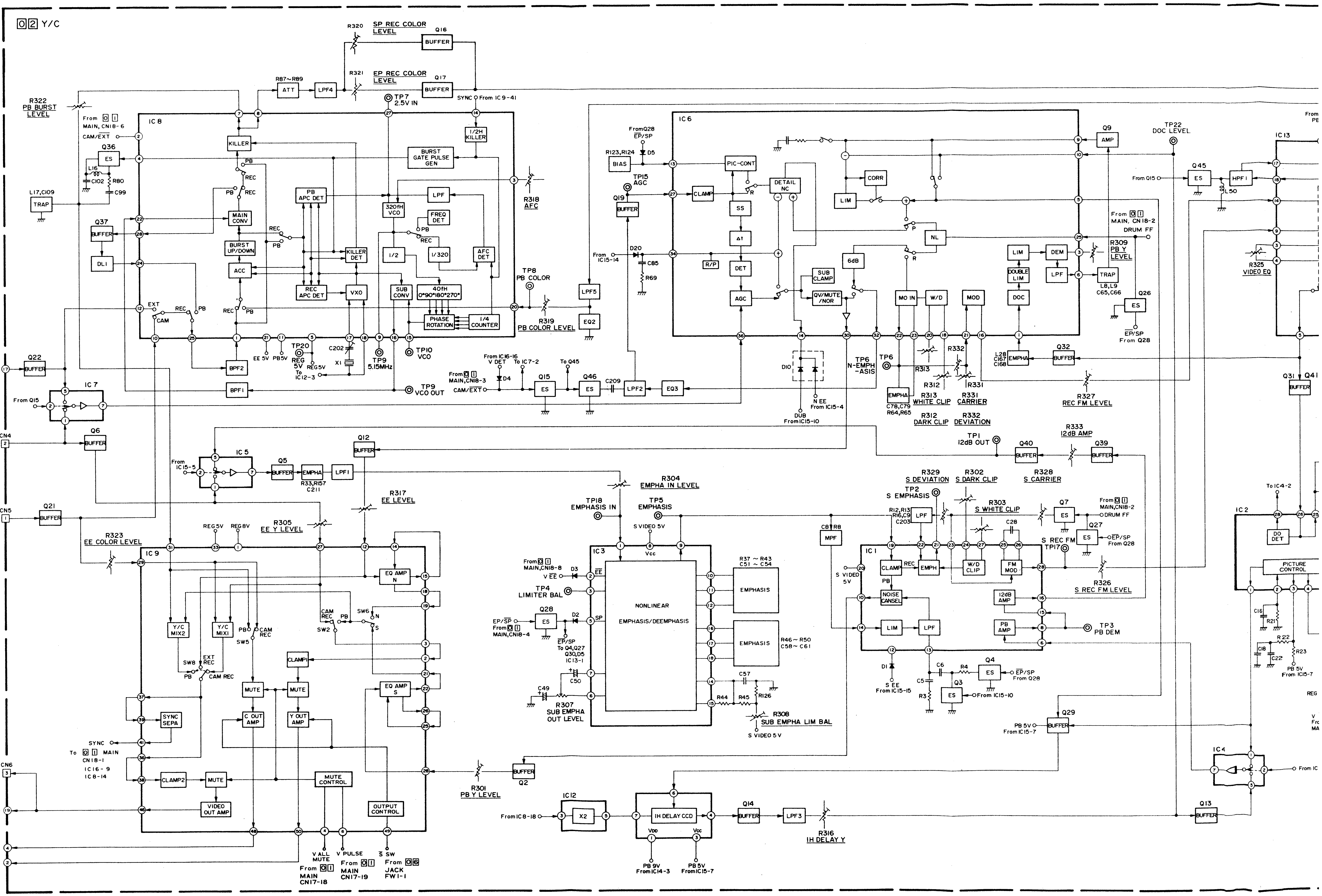


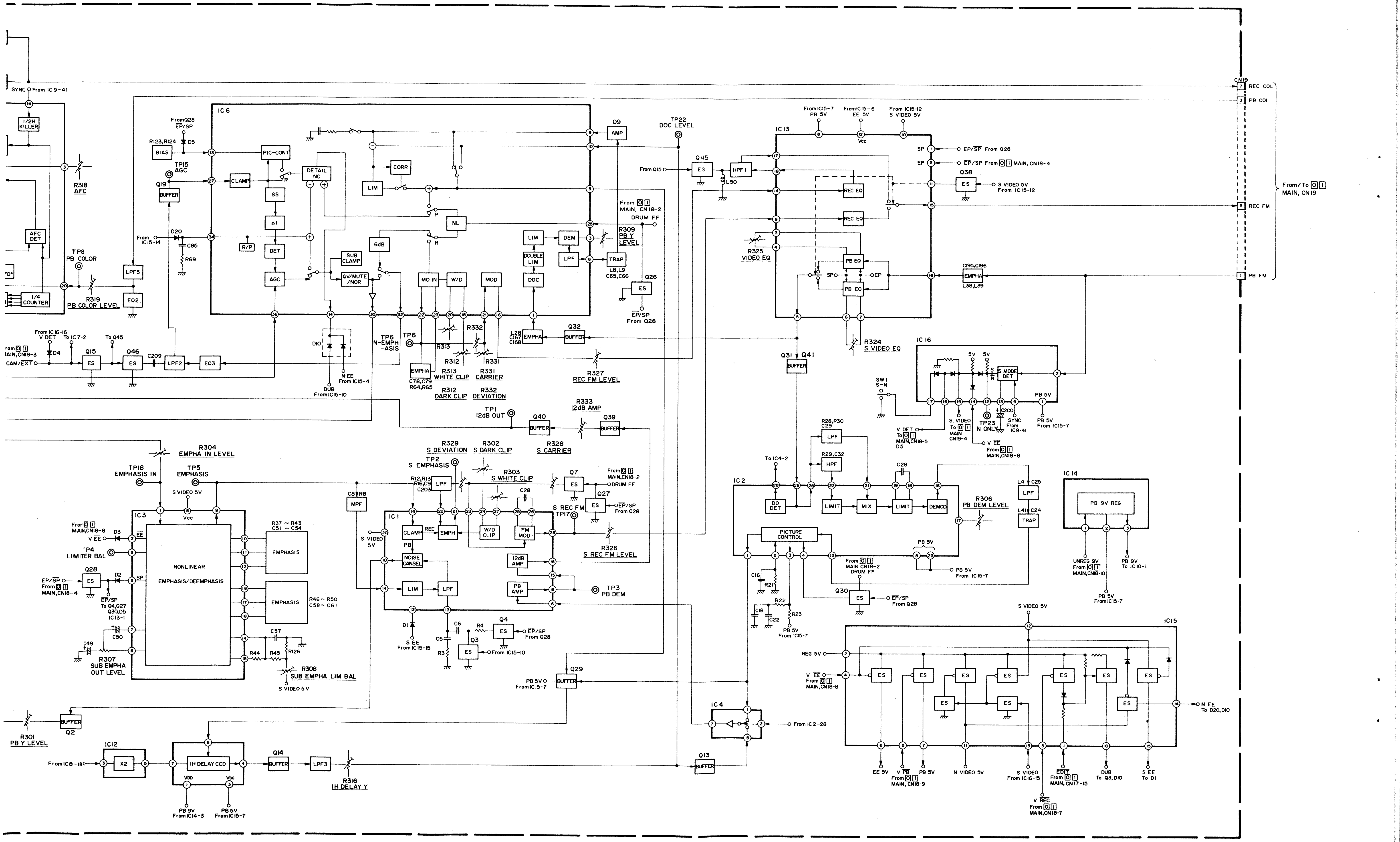
0 1 SERVO (MAIN)
ACTIVE FILTER
R189, C147
TP108
PB CTL PULSE
IC103
L PB
H REC
From IC107-4
R183
R184
MS1
SEARCH
From MECHACON
H: REC
M: SEARCH
L: PB
AMP
REC
ES
PB
REC CONTROL AMP
CTL HEAD
CN12
To 0 1 MECHACON
CAP FG
SM1
PB CTL PULSE
SM2
TP107
CAP FG
ACTIVE FILTER
R185, C143
Q114
ES
IC106
CAPSTAN TRAP
DRUM TRAP
IC104
IC105
To Q127
To Q126
To Q125
3Ø LOGIC
HALL AMP
MODE AMP
HG2(+)
HG2(-)
HG1(+)
HG1(-)
HG3(+)
HG3(-)
D102
MS11
CAP FWD
From MECHACON
CAP REV
To IC101-29
MS10
CAP REV
From MECHACON
RS3
CAP POWER
From REGULATOR
CN16
COIL 3
COIL 2
COIL 1
Q127
From IC105-9
Q126
From IC105-11
Q125
From IC105-12
HG1(+)
HG1(-)
HG2(+)
HG2(-)
HG3(+)
HG3(-)
From/To CAPSTAN MOTOR
MR1
MR2
CN5
DRUM FG
DRUM PG
DRUM REF
From/To 0 3 DRUM MDA CN254
IC101
From 0 2 Y/C, CN18
SYNC
CN18
SYNC DET
REC ON
ASB
REF COUNTER
DRUM PHASE SHIFT
DRUM PHASE DET
FILTER
CLAMP
Q103
MS5
V PULSE ON
From MECHACON
CAP PHASE SHIFT
PB INST
OVERLAP1 COUNTER
To IC102-2
FF
OVERLAP2 COUNTER
To IC102-3
V PULSE ON
From MECHACON
3H or 9H
V PULSE WIDTH COUNTER
V PULSE
To Y/C CN17-19
1/3
DRUM FG COUNTER
PULSE GEN
To IC102-4
DRUM PG COUNTER
PB SW MM
R108
Q107
PB SWITCHING POINT VOLUME
From Q106 CAP REV
REV
SW1
CH1
SW2
DRUM F/V CONV
FILTER
From MECHACON
Q110
PAUSE
MS6
X2
1/N
SEARCH
1/3
SP
CAP F/V CONV
EP
R126~R128
ATT
ASB ON
1/3
1/M
CAP REF COUNTER
REV
FWD
1/N
SEARCH
REC
CAP PHASE DETECTOR
TP104
CAP P/D
ACTIVE FILTER
R168, C128, C129
TP106
DISCHAGE PULSE
REC CTL COUNTER
C105
X'TAL 1
R120
R121
C104
FSC
PWM GEN
CLOCK
BIT PATTERN
PRESET
R138
REG 5V
REC ON
TRACKING MM
IC107
R101
TRACKING VR
R103
TRACKING PRESET
To IC103-6
IC102
(L)
(H)
MS9
CAP M CTL REF
From MECHACON
R141
Q113
MS8
CAP CTL
From MECHACON
R142
CAP CTL
To Q122
SR2
CAP REF
To 0 1 REGULATOR
Q111
SP/EP
MS4
EP/SP
From MECHACON
ACTIVE FILTER
R154
C121, C122
Q122
CAP CTL
From Q113
R152
Q121
SR3
DRUM POWER UP
To SERVO
Q120
SR1
CAP POWER UP
To REGULATOR
Q112
MS6
PAUSE
From MECHACON
SW LOGIC
A
B
C
REC
FF
PB
To PRE/REC AMP CN11
R164
EP/SP CTL DELAY
CONTROL DELAY MMV
TP103
CTL DELAY MMV
DRUM FF
TP111
DRUM FF
From IC101-12
From IC101-13
From IC101-20
OV1
OV2
1/3PG
MA
MI
MRR
MS3
S MODE A
MS2
S MODE 1
From MECHACON

4.9 ENCODER BLOCK DIAGRAM

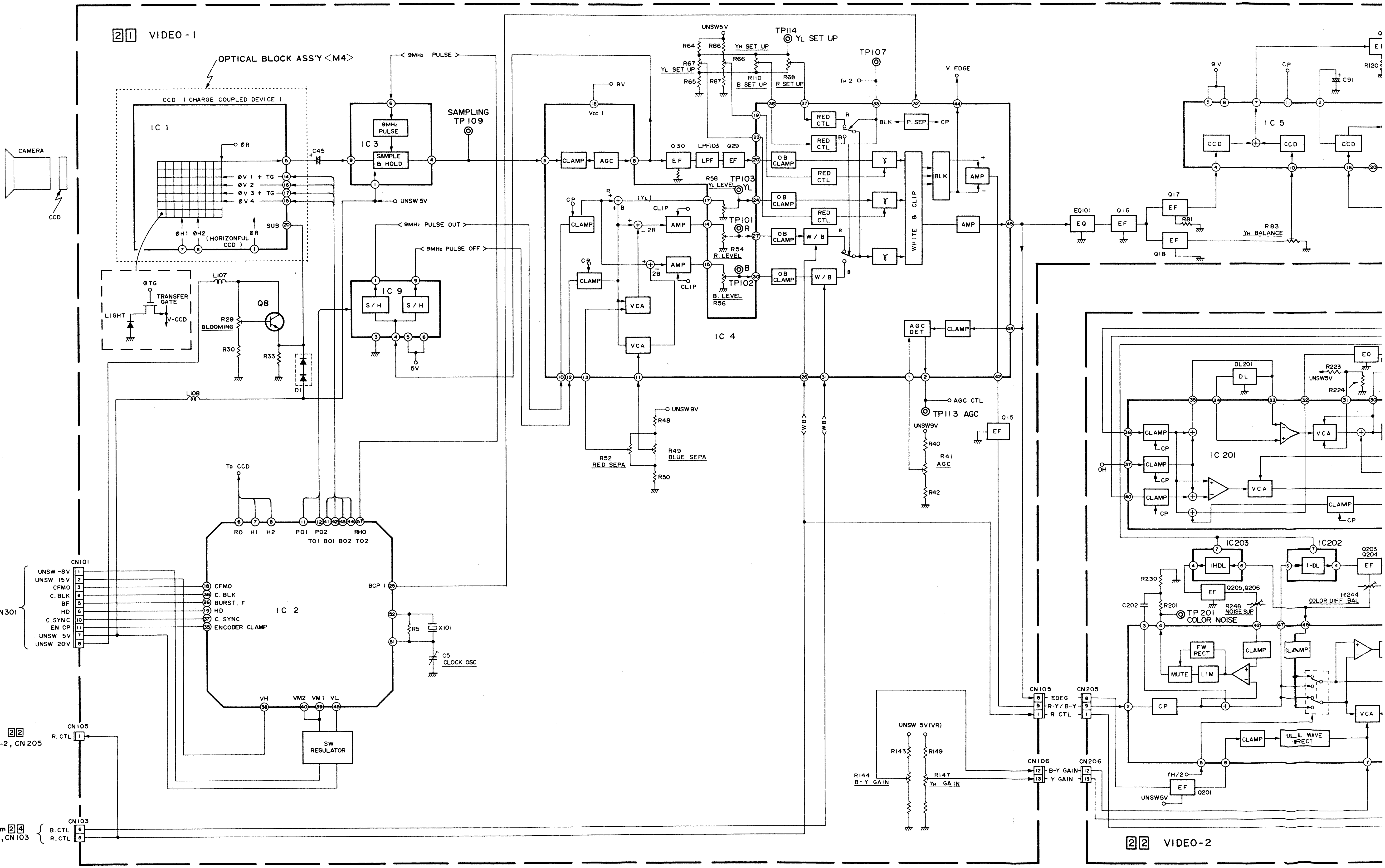

2 3 ENCODER
From 2 1 VIDEO-1 CN101
CN301
C SYNC 10
R320
SYNC LEVEL
R309
WHITE CLIP
IC 304
From VIDEO-1 CN302-7 SMTH2
C GAIN From VF CONNECTOR CN307-2
Q307
ES
FRNG 2 From IC302
IC 301
TP301 Y IN
From 2 1 VIDEO-1 CN102
CN302
Y 1
32
CLAMP
WHITE CLIP
BLK
BLACK CLIP
NEGA/POSI N PEDE
FADER
MIX AMP
27
28
31
25
Q304
BUFF
TP306 Y OUT
CN305
3 Y SIGNAL
To 0 2 Y/C, CN4
From 2 1 VIDEO-1 CN101
CN301
C BLK 4
EN CP 11
R324
R325
2
PULSE SEPA
UNSW 5V
R318
R319
24
Q306
ES
FADER From CN302-8
FADER CTL
UNSW 5V
R314
R315
26
Q308
ES
FRNG 2 From IC302
TP302 R-Y
CN302
R-Y 2
3
CLAMP
BAL MOD
4
From 2 1 VIDEO-1 CN102
R326
R CARRIER BAL
6
VREF GENE
R327
B CARRIER BAL
9
TP303 B-Y
B-Y 3
10
CLAMP
BAL MOD
N/P
BLK
FADER
CHROMA GAIN
BURST MIX
16
BPF 301
Q305
BUFF
TP305 C OUT
1 CHROMA SIGNAL
To 0 2 Y/C, CN5
PHASE SHIFTER
BURST GATE
11
BF From CN301-5
7
5
8
15
14
IC302
CN302
FRNG 2 To Q306~Q308
9 FRNG 2
From 2 1 VIDEO-1 CN102
To 2 2 VIDEO-2 CN204
CN304
SC2 1
Q303
BUFF
R307
BURST PHASE
R333
CHROMA GAIN
R336
BURST LEVEL
IC 303
BUFF
Q302
4 SC1
HD 1
3 SC2
CFMD 2
CN301
6 HD
3 CFMD
From/To 2 1 VIDEO-1 CN101
To 2 1 VIDEO-1 CN102
CN302
2FSC 5
BUFF
Q301
5 2SC

4.10 Y/C BLOCK DIAGRAM

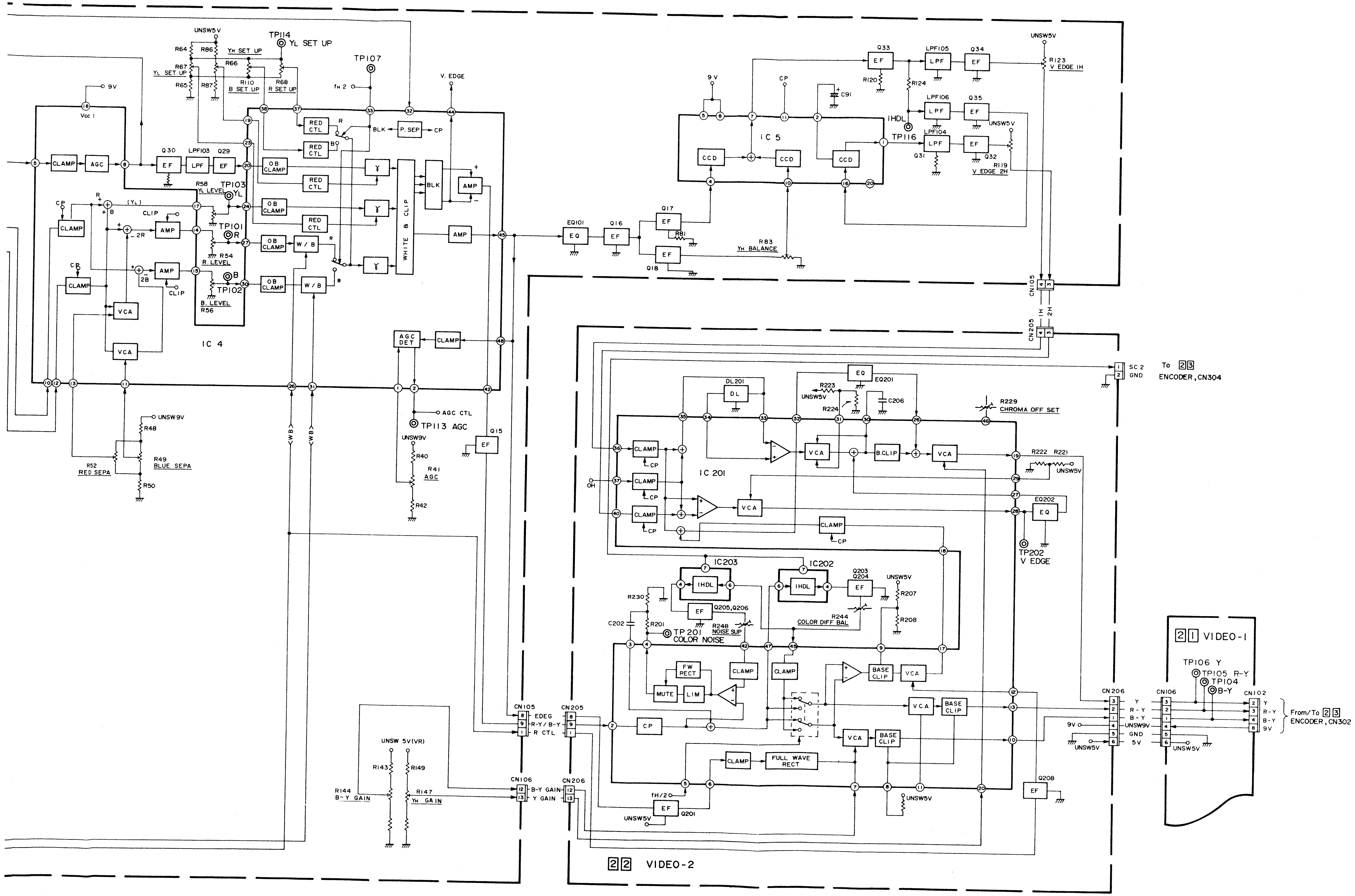

02 Y/C
R320 SP REC COLOR LEVEL
Q16 BUFFER
R321 EP REC COLOR LEVEL
Q17 BUFFER
R87~R89 ATT LPF4
TP7 2.5V IN
SYNC From IC9-41
R322 PB BURST LEVEL
IC8
From 01 MAIN, CN18-6
CAM/EXT
Q36 ES
L16 C102 R80 C99
L17,C109 TRAP
KILLER
1/2H KILLER
BURST GATE PULSE GEN
PB APC DET
320fH VCO
LPF
FREQ DET
MAIN CONV
BURST UP/DOWN
ACC
KILLER DET
1/2
1/320
AFC DET
REC APC DET
VXO
SUB CONV
40fH 0°90°180°270°
PHASE ROTATION
1/4 COUNTER
R318 AFC
TP8 PB COLOR
R319 PB COLOR LEVEL
Q37 BUFFER
DL1
EXT REC PB CAM
BPF2
BPF1
EE 5V PB5V
TP20 REG 5V REG5V To IC12-3
C202 X1
TP9 5.15MHz
TP10 VCO
TP9 VCO OUT
From 06 JACK VIDEO
Q22 BUFFER
IC7
From Q15
CN4 Y SIGNAL
Q6 BUFFER
From 23 ENC,CN305
CN5 CHROMA SIGNAL
Q21 BUFFER
IC5 From IC15-5
Q5 BUFFER EMPHA R33,R157 C211 LPF1
Q12 BUFFER
R317 EE LEVEL
R305 EE Y LEVEL
R323 EE COLOR LEVEL
REG5V REG8V
IC9
EQ AMP N
Y/C MIX2
Y/C MIX1
PB CAM REC SW5
SW8 EXT REC PB CAM REC
CAM REC PB SW2
SW6 N S
CLAMP1
MUTE
C OUT AMP
Y OUT AMP
EQ AMP S
SYNC SEPA
SYNC
To 01 MAIN CN18-1 IC16-9 IC8-14
To VF CONNECTOR CN6 VIDEO
CLAMP2
MUTE
VIDEO OUT AMP
MUTE CONTROL
OUTPUT CONTROL
To 06 JACK VIDEO CHROMA SIGNAL Y SIGNAL
V ALL MUTE From 01 MAIN CN17-18
V PULSE From 01 MAIN CN17-19
S SW From 06 JACK FW1-1
R301 PB Y LEVEL
Q2 BUFFER
From Q28 EP/SP
R123,R124 D5
BIAS
TP15 AGC
Q19 BUFFER
IC6
CLAMP
PIC-CONT
DETAIL NC
SS
Δt
DET
AGC
R/P
From IC15-14 D20 C85 R69
LPF5
EQ2
SUB CLAMP
QV/MUTE /NOR
6dB
LIM
CORR
NL
MO IN
W/D
MOD
LIM DEM DOUBLE LIM LPF DOC
TRAP
Q9 AMP
TP22 DOC LEVEL
From 01 MAIN, CN18-2 DRUM FF
R309 PB Y LEVEL
L8,L9 C65,C66
Q26 ES
EP/SP From Q28
From IC16-16 V DET To IC7-2 To Q45
From 01 MAIN, CN18-3 CAM/EXT D4
Q15 ES
Q46 ES
C209 LPF2 EQ3
DIO DUB From IC15-10
N EE From IC15-4
TP6 N-EMPH -ASIS
TP6
R313 R312 R332 R331
EMPHA C78,C79 R64,R65
R313 WHITE CLIP
R331 CARRIER
R312 DARK CLIP
R332 DEVIATION
L28 C167 C168 EMPHA
Q32 BUFFER
R327 REC FM LEVEL
TP1 12dB OUT
Q40 BUFFER
R333 12dB AMP
Q39 BUFFER
R304 EMPHA IN LEVEL
TP18 EMPHASIS IN
TP5 EMPHASIS
S VIDEO 5V
IC3
From 01 MAIN, CN18-8 V EE D3
TP4 LIMITER BAL
Q28 ES D2
EP/SP From 01 MAIN, CN18-4
EP/SP To Q4,Q27 Q30,D5 IC13-1
NONLINEAR EMPHASIS/DEEMPHASIS
EMPHASIS
R37~R43 C51~C54
R46~R50 C58~C61
C49 C50
R307 SUB EMPHA OUT LEVEL
C57 R44 R45 R126
R308 SUB EMPHA LIM BAL
S VIDEO 5V
C81 R8 MPF
R329 S DEVIATION
R302 S DARK CLIP
R328 S CARRIER
TP2 S EMPHASIS
R12,R13 R16,C9 C203 LPF
R303 S WHITE CLIP C28
Q7 ES
From 01 MAIN, CN18-2 DRUM FF
Q27 ES EP/SP From Q28
S REC FM TP17
IC1
CLAMP REC EMPH
W/D CLIP
FM MOD
PB NOISE CANSEL
12dB AMP
PB AMP
S VIDEO 5V
LIM LPF
TP3 PB DEM
D1 S EE From IC15-15
C6 R4 C5 R3
Q4 ES EP/SP From Q28
Q3 ES From IC15-10
R326 S REC FM LEVEL
Q29 BUFFER PB 5V From IC15-7
IC12 From IC8-18 X2
IH DELAY CCD VDD Vcc
PB 9V From IC14-3
PB 5V From IC15-7
Q14 BUFFER LPF3
R316 IH DELAY Y
Q13 BUFFER
IC4 From IC
IC13
From Q15
Q45 ES
HPF1 L50
R325 VIDEO EQ
Q31 Q41 BUFFER
To IC4-2
IC2 DO DET
PICTURE CONTROL
C16 R21 C18 C22 R22 R23
PB 5V From IC15-7
REG


SYNC From IC9-41
1/2H KILLER
R318 AFC
AFC DET
TP8 PB COLOR
1/4 COUNTER
R319 PB COLOR LEVEL
LPF5
EQ2
IC6
From Q28 EP/SP
R123,R124 D5
BIAS
TP15 AGC
Q19 BUFFER
CLAMP
PIC-CONT
DETAIL NC
SS
Δt
DET
AGC
R/P
From IC15-14
D20
C85
R69
SUB CLAMP
QV/MUTE /NOR
6dB
CORR
LIM
NL
MO IN
W/D
MOD
DOC
DOUBLE LIM
LIM
DEM
LPF
TRAP
Q9 AMP
TP22 DOC LEVEL
From ⓞⓘ MAIN, CN18-2 DRUM FF
R309 PB Y LEVEL
L8,L9 C65,C66
Q26 ES
EP/SP From Q28
From IC16-16 V DET
To IC7-2
To Q45
From ⓞⓘ MAIN,CN18-3
CAM/EXT
D4
Q15 ES
Q46 ES
C209
LPF2
EQ3
D10
DUB From IC15-10
N EE From IC15-4
TP6 N-EMPH -ASIS
TP6
EMPHA
C78,C79 R64,R65
R313 WHITE CLIP
R312 DARK CLIP
R332
R331 CARRIER
R332 DEVIATION
L28 C167 C168 EMPHA
Q32 BUFFER
R327 REC FM LEVEL
R333 12dB AMP
TP1 12dB OUT
Q40 BUFFER
Q39 BUFFER
R304 EMPHA IN LEVEL
TP18 EMPHASIS IN
TP5 EMPHASIS
S VIDEO 5V
IC3
Vcc
NONLINEAR EMPHASIS/DEEMPHASIS
EMPHASIS
EMPHASIS
R37 ~ R43 C51 ~ C54
R46 ~ R50 C58 ~ C61
From ⓞⓘ MAIN,CN18-8
V EE
D3
TP4 LIMITER BAL
Q28 ES
EP/SP From ⓞⓘ MAIN,CN18-4
D2
SP
EP/SP To Q4,Q27 Q30,D5 IC13-1
C50
C49
R307 SUB EMPHA OUT LEVEL
C57
R44 R45 R126
R308 SUB EMPHA LIM BAL
S VIDEO 5V
R329 S DEVIATION
R302 S DARK CLIP
R328 S CARRIER
TP2 S EMPHASIS
R303 S WHITE CLIP
C81,R8 MPF
R12,R13 R16,C9 C203
LPF
C28
Q7 ES
From ⓞⓘ MAIN,CN18-2 DRUM FF
Q27 ES
EP/SP From Q28
IC1
S VIDEO 5V
CLAMP
REC
PB
EMPH
W/D CLIP
FM MOD
NOISE CANSEL
LIM
LPF
12dB AMP
PB AMP
S REC FM TP17
R326 S REC FM LEVEL
TP3 PB DEM
D1
S EE From IC15-15
C5
C6
R3
R4
Q4 ES
EP/SP From Q28
Q3 ES
From IC15-10
PB 5V From IC15-7
Q29 BUFFER
R301 PB Y LEVEL
Q2 BUFFER
IC12
From IC8-18
X2
IH DELAY CCD
VDD
Vcc
PB 9V From IC14-3
PB 5V From IC15-7
Q14 BUFFER
LPF3
R316 IH DELAY Y
Q13 BUFFER
IC4
From IC2-28
From IC15-7 PB 5V
From IC15-6 EE 5V
From IC15-12 S VIDEO 5V
IC13
Vcc
From Q15
Q45 ES
L50
HPF1
REC EQ
REC EQ
PB EQ
PB EQ
SP
EP
R325 VIDEO EQ
SP
EP
EP/SP From Q28
EP/SP From ⓞⓘ MAIN,CN18-4
Q38 ES
S VIDEO 5V From IC15-12
C195,C196 EMPHA L38,L39
R324 S VIDEO EQ
CN19
REC COL
PB COL
REC FM
PB FM
From/To ⓞⓘ MAIN, CN19
Q31 Q41 BUFFER
IC16
5V 5V
S N
S MODE DET
PB 5V
PB 5V From IC15-7
SW1 S-N
V DET To ⓞⓘ MAIN,CN18-5 D5
S. VIDEO To ⓞⓘ MAIN CN19-4
TP23 N ONLY
C200
SYNC From IC9-41
V EE From ⓞⓘ MAIN,CN18-8
R28,R30 C29
LPF
R29,C32 HPF
To IC4-2
IC2
DO DET
LIMIT
MIX
LIMIT
DEMOD
C28
R306 PB DEM LEVEL
L4 C25 LPF
L41 C24 TRAP
PICTURE CONTROL
PB 5V
PB 5V From IC15-7
From ⓞⓘ MAIN CN18-2 DRUM FF
C16 R21
C18 C22
R22 R23
PB 5V From IC15-7
Q30 ES
EP/SP From Q28
IC14
PB 9V REG
UNREG 9V From ⓞⓘ MAIN,CN18-10
PB 9V To IC10-1
PB 5V From IC15-7
S VIDEO 5V
IC15
REG 5V
V EE From ⓞⓘ MAIN,CN18-8
ES
N EE To D20,D10
EE 5V
V PB From ⓞⓘ MAIN, CN18-9
PB 5V
N VIDEO 5V
S VIDEO From IC16-15
V REC From ⓞⓘ MAIN,CN18-7
EDIT From ⓞⓘ MAIN, CN17-15
DUB To Q3,D10
S EE To D1

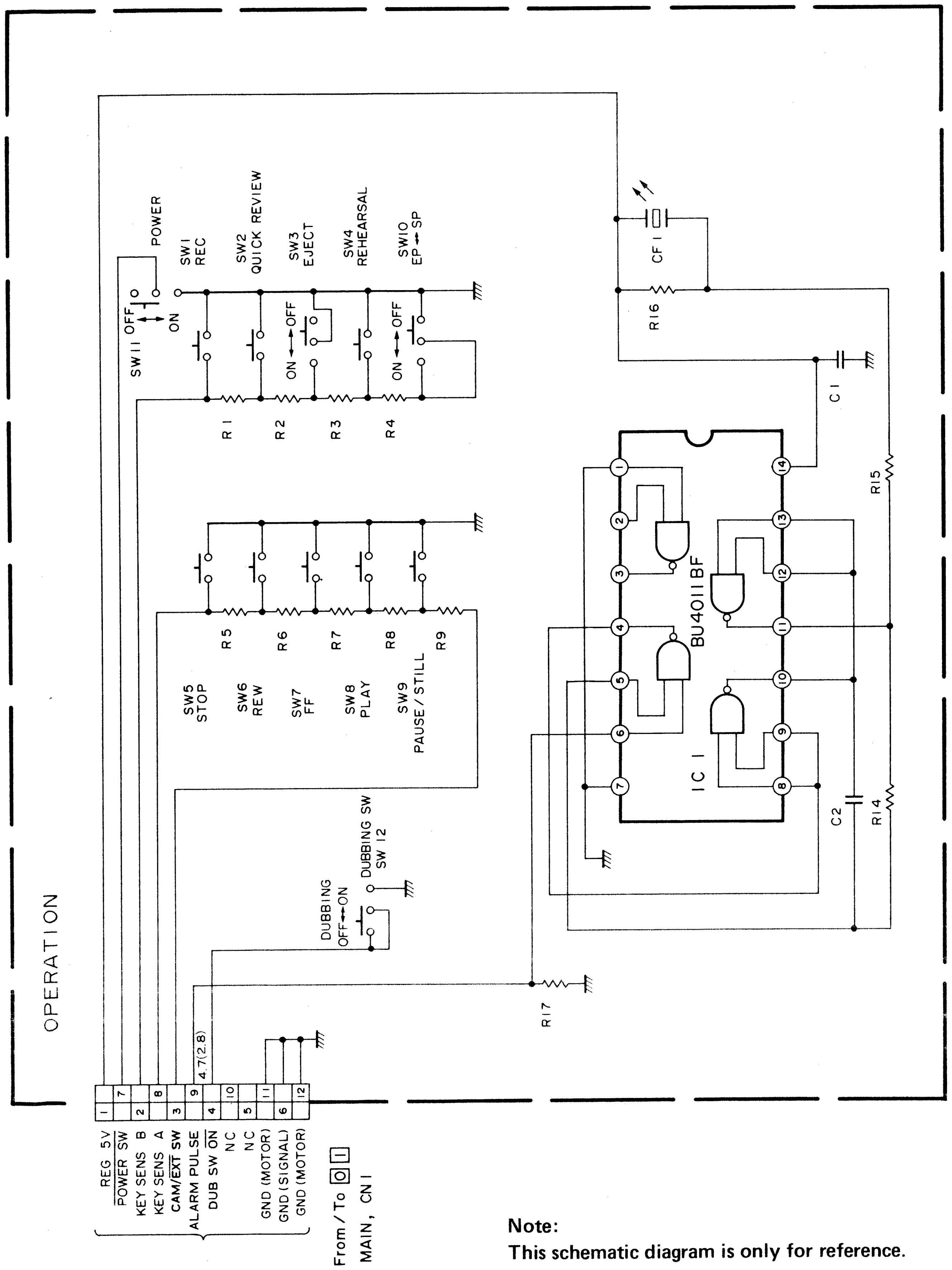
4.11 VIDEO BLOCK DIAGRAM



2 1 VIDEO-1
OPTICAL BLOCK ASS'Y <M4>
CAMERA
CCD
CCD (CHARGE COUPLED DEVICE)
IC 1
ØR
ØV 1 + TG
ØV 2
ØV 3 + TG
ØV 4
SUB
ØH1 ØH2 (HORIZONFUL CCD)
ØR
ØTG
TRANSFER GATE
LIGHT
V-CCD
L107
R29 BLOOMING
Q8
R30
R33
D1
L108
C45
9MHz PULSE
IC 3
9MHz PULSE
SAMPLE & HOLD
UNSW 5V
SAMPLING TP 109
9MHz PULSE OUT
9MHz PULSE OFF
IC 9
S/H
S/H
5V
To CCD
IC 2
R0 H1 H2
P01 P02
T01 B01 B02 T02
RH0
CFMO
C. BLK
BURST. F
HD
C. SYNC
ENCODER CLAMP
BCP 1
R5
X101
C5 CLOCK OSC
VH VM2 VM1 VL
SW REGULATOR
CN101
UNSW -8V
UNSW 15V
CFMO
C. BLK
BF
HD
C.SYNC
EN CP
UNSW 5V
UNSW 20V
From/To 2 3 ENCODER, CN301
CN105
To 2 2 VIDEO-2, CN205
R. CTL
CN103
From 2 4 IND, CN103
B.CTL
R.CTL
9V
Vcc 1
CLAMP
AGC
Q30 LPF103 Q29
EF LPF EF
CP
CLAMP
(YL)
CLIP
AMP
2R
2B
CLIP
VCA
VCA
IC 4
R48
UNSW9V
R49 BLUE SEPA
R52 RED SEPA
R50
UNSW5V
R64 R86
R67 YL SET UP
R65 R87
R66
YH SET UP
R110 B SET UP
R68 R SET UP
TP114 YL SET UP
TP107
fH 2
V. EDGE
RED CTL
RED CTL
RED CTL
RED CTL
BLK
P. SEP
CP
OB CLAMP
OB CLAMP
OB CLAMP
OB CLAMP
R58 YL LEVEL
TP103 YL
TP101 R
R54 R. LEVEL
TP102 B
B. LEVEL R56
W/B
W/B
γ
WHITE & CLIP
BLK
AMP
AMP
AGC DET
CLAMP
AGC CTL
TP113 AGC
Q15
EF
UNSW9V
R40
R41 AGC
R42
WB
WB
EQ101 Q16
EQ EF
Q17
EF
R81
EF
Q18
R83 YH BALANCE
9V CP
C91
R120
IC 5
CCD CCD CCD
CN105
EDEG
R-Y/B-Y
R CTL
CN106
B-Y GAIN
Y GAIN
UNSW 5V(VR)
R143 R149
R144 B-Y GAIN
R147 YH GAIN
CN205
CN206
DL201
DL
EQ
R223
UNSW5V
R224
CLAMP
CP
IC 201
OH
VCA
VCA
CLAMP
IC203
IC202
1HDL
1HDL
Q203 Q204
EF
R230
EF
Q205,Q206
C202
R201
R248 NOISE SUP
TP 201 COLOR NOISE
R244 COLOR DIFF BAL
FW RECT
MUTE
LIM
CLAMP
CLAMP
CP
CLAMP
FULL WAVE RECT
VCA
fH/2
EF
Q201
UNSW5V
2 2 VIDEO-2

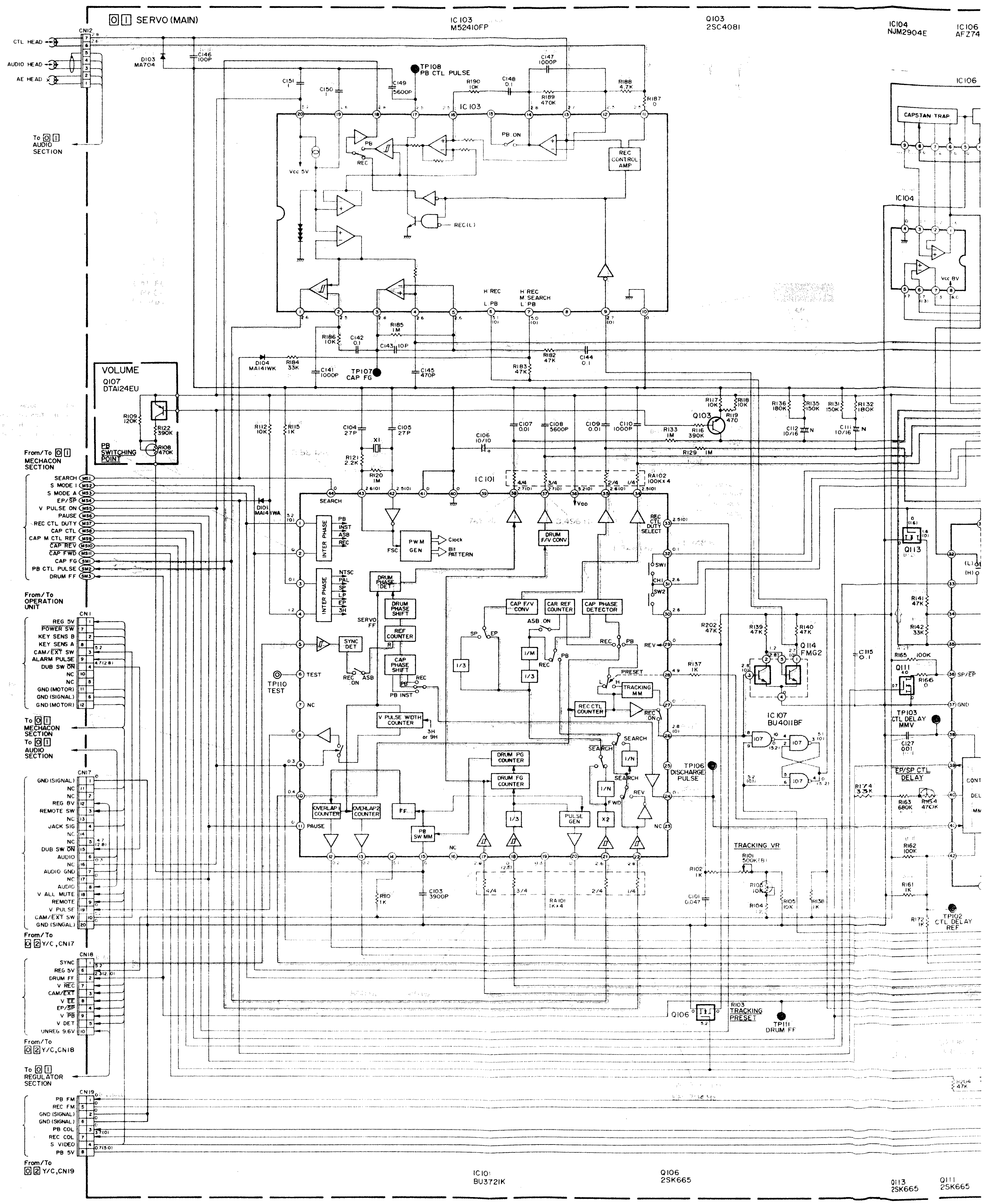

UNSW5V
TP114 YL SET UP
YH SET UP
R64
R86
R66
R67
YL SET UP
R65
R87
R110 B SET UP
R68 R SET UP
TP107
fH 2
V. EDGE
9V
Vcc 1
CLAMP
AGC
Q30
LPF103
Q29
EF
LPF
RED CTL
P. SEP
BLK
CP
OB CLAMP
γ
WHITE & CLIP
AMP
R58 YL LEVEL
TP103 YL
CLIP
TP101 R
R54 R. LEVEL
TP102 B
B. LEVEL R56
W / B
VCA
IC 4
AGC DET
AGC CTL
TP113 AGC
UNSW9V
R40
R41 AGC
R42
Q15
R48
R49 BLUE SEPA
R52 RED SEPA
R50
WB
EQ101
EQ
Q16
Q17
R81
Q18
R83 YH BALANCE
IC 5
CCD
C91
Q33
R120
R124
IHDL
TP116
LPF105
LPF106
LPF104
Q34
Q35
Q31
Q32
R123 V EDGE 1H
R119 V EDGE 2H
CN105
CN205
1H
2H
SC 2
GND
To 23 ENCODER, CN304
DL201
DL
EQ201
R223
R224
C206
R229 CHROMA OFF SET
B.CLIP
R222 R221
IC 201
EQ202
TP202 V EDGE
OH
IC203
IC202
Q203 Q204
R207
R208
R230
Q205,Q206
R244 COLOR DIFF BAL
R248 NOISE SUP
C202
R201
TP 201 COLOR NOISE
FW RECT
MUTE
LIM
BASE CLIP
FULL WAVE RECT
CN105
EDEG
R-Y/B-Y
R CTL
CN106
B-Y GAIN
Y GAIN
CN206
UNSW 5V(VR)
R143
R149
R144 B-Y GAIN
R147 YH GAIN
fH/2
Q201
Q208
21 VIDEO-1
TP106 Y
TP105 R-Y
TP104 B-Y
CN102
Y
R-Y
B-Y
UNSW9V
GND
5V
9V
From/To 23 ENCODER, CN302
22 VIDEO-2

4.12 OPERATION SCHEMATIC DIAGRAM

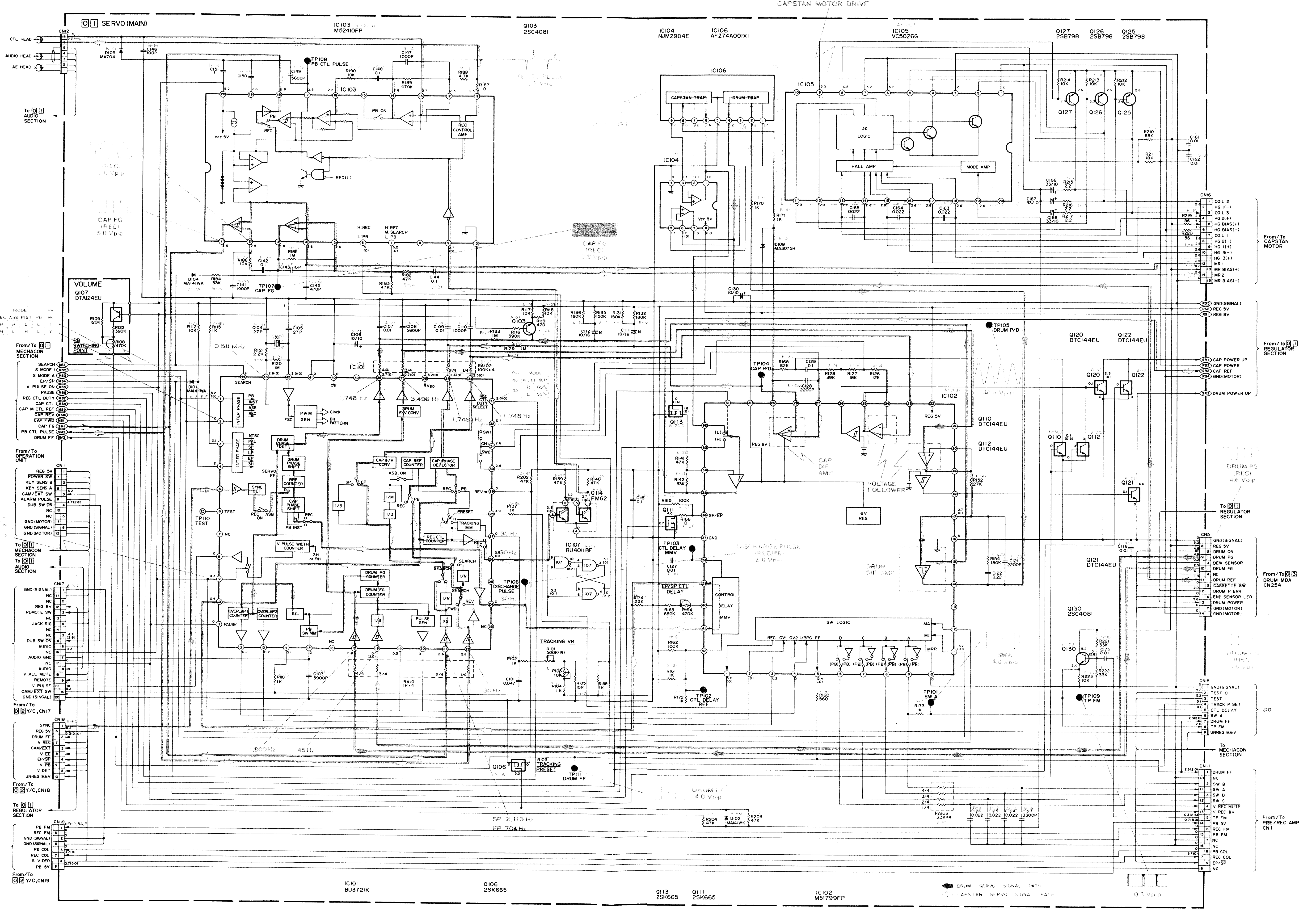

OPERATION
POWER
SW11 OFF ON
SW1 REC
SW2 QUICK REVIEW
SW3 EJECT
SW4 REHEARSAL
SW10 EP ↔ SP
ON ↔ OFF
R1
R2
R3
R4
R5
R6
R7
R8
R9
SW5 STOP
SW6 REW
SW7 FF
SW8 PLAY
SW9 PAUSE / STILL
DUBBING OFF ↔ ON
DUBBING SW SW12
CF1
R16
C1
R15
R14
C2
R17
IC1 BU4011BF
4.7(2.8)
1 2 3 4 5 6 7 8 9 10 11 12
REG 5V
POWER SW
KEY SENS B
KEY SENS A
CAM/EXT SW
ALARM PULSE
DUB SW ON
NC
NC
GND (MOTOR)
GND (SIGNAL)
GND (MOTOR)
From / To 01 MAIN, CN1

Note:
This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

4.13 SERVO SCHEMATIC DIAGRAM

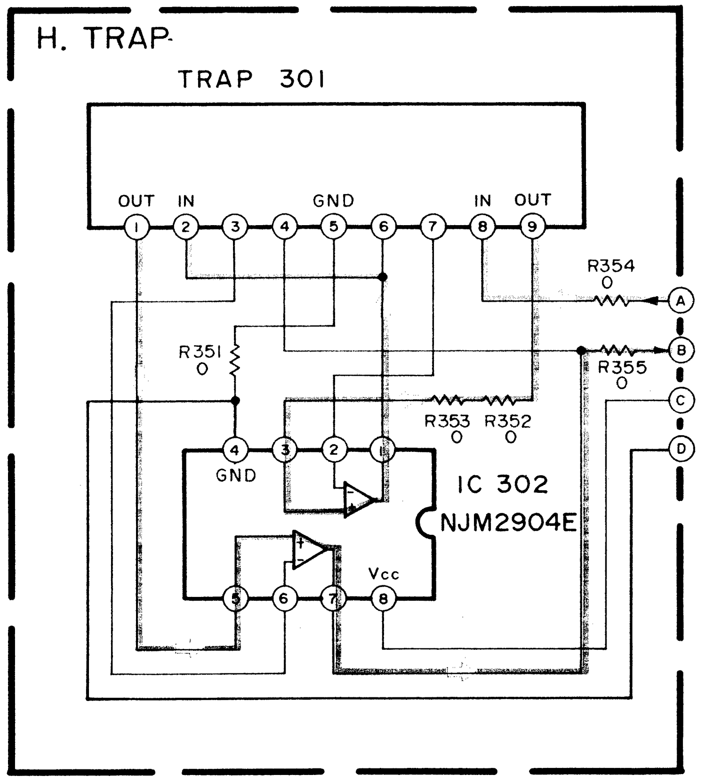

01 SERVO (MAIN)
IC103 M52410FP
Q103 2SC4081
IC104 NJM2904E
IC106 AFZ74
CTL HEAD
AUDIO HEAD
AE HEAD
CN12
D103 MA704
C146 100P
TP108 PB CTL PULSE
To 01 AUDIO SECTION
REC CONTROL AMP
CAPSTAN TRAP
VOLUME Q107 DTA124EU
PB SWITCHING POINT
From/To 01 MECHACON SECTION
SEARCH
S MODE 1
S MODE A
EP/SP
V PULSE ON
PAUSE
REC CTL DUTY
CAP CTL
CAP M CTL REF
CAP REV
CAP FWD
CAP FG
PB CTL PULSE
DRUM FF
From/To OPERATION UNIT
CN1
REG 5V
POWER SW
KEY SENS B
KEY SENS A
CAM/EXT SW
ALARM PULSE
DUB SW ON
GND (MOTOR)
GND (SIGNAL)
To 01 MECHACON SECTION
To 01 AUDIO SECTION
CN17
GND (SIGNAL)
REG 8V
REMOTE SW
JACK SIG
DUB SW ON
AUDIO
AUDIO GND
V ALL MUTE
REMOTE
V PULSE
CAM/EXT SW
From/To 02 Y/C, CN17
CN18
SYNC
REG 5V
DRUM FF
V REC
CAM/EXT
V EE
EP/SP
V PB
V DET
UNREG 9.6V
From/To 02 Y/C, CN18
To 01 REGULATOR SECTION
CN19
PB FM
REC FM
GND (SIGNAL)
PB COL
REC COL
S VIDEO
PB 5V
From/To 02 Y/C, CN19
IC101
INTER PHASE
PWM GEN
DRUM F/V CONV
DRUM PHASE DET
DRUM PHASE SHIFT
SYNC DET
REF COUNTER
CAP PHASE SHIFT
CAP F/V CONV
CAP REF COUNTER
CAP PHASE DETECTOR
V PULSE WIDTH COUNTER
DRUM PG COUNTER
DRUM FG COUNTER
OVERLAP1 COUNTER
OVERLAP2 COUNTER
PULSE GEN
TRACKING MM
REC CTL COUNTER
REC CTL DUTY SELECT
TP110 TEST
TP107 CAP FG
TP106 DISCHARGE PULSE
IC107 BU4011BF
Q114 FMG2
Q111
Q113
TP103 CTL DELAY MMV
EP/SP CTL DELAY
TP102 CTL DELAY REF
TRACKING VR
R103 TRACKING PRESET
TP111 DRUM FF
Q106
IC101 BU3721K
Q106 2SK665
Q113 2SK665
Q111 2SK665

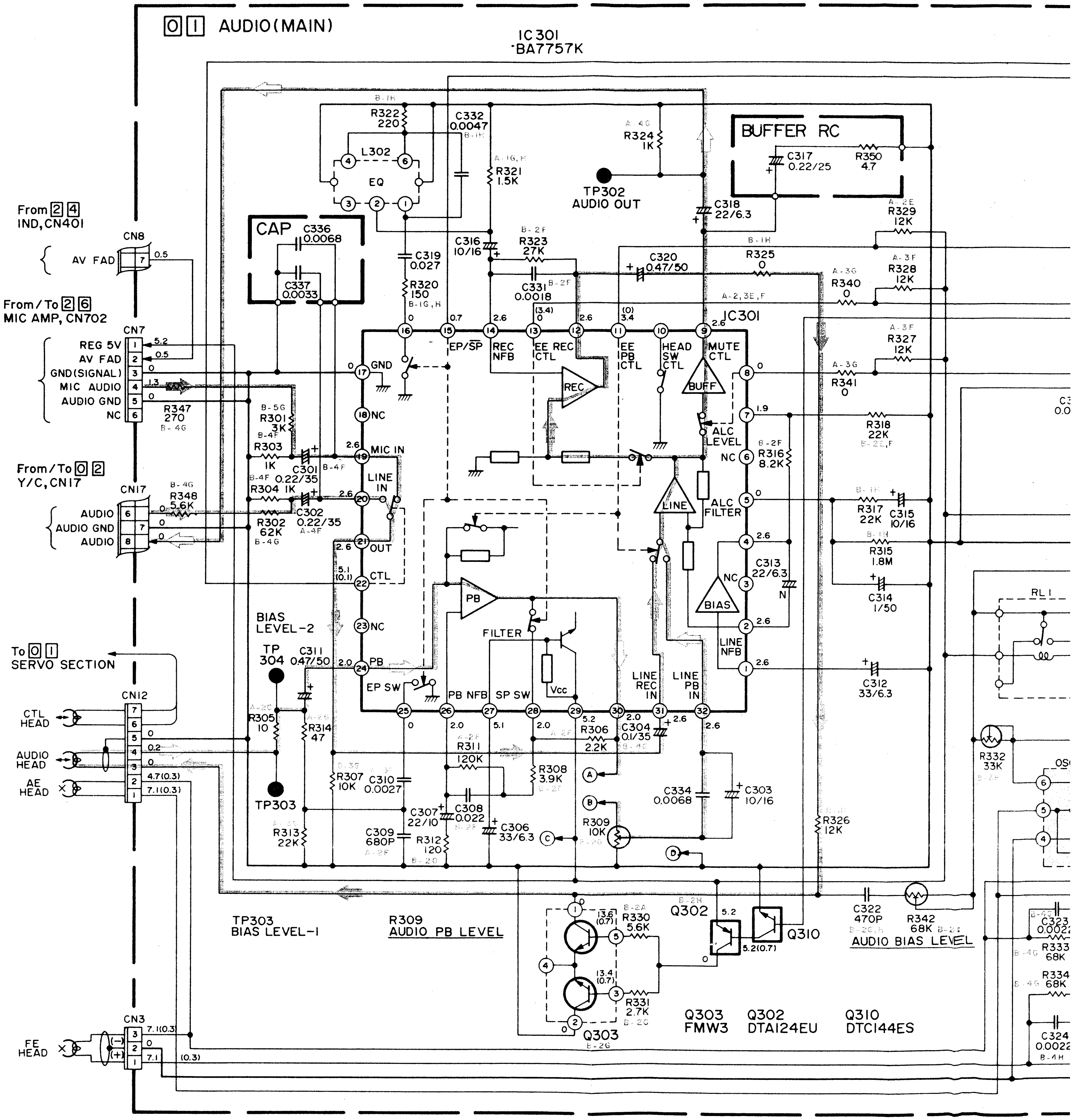
4.13 SERVO SCHEMATIC DIAGRAM

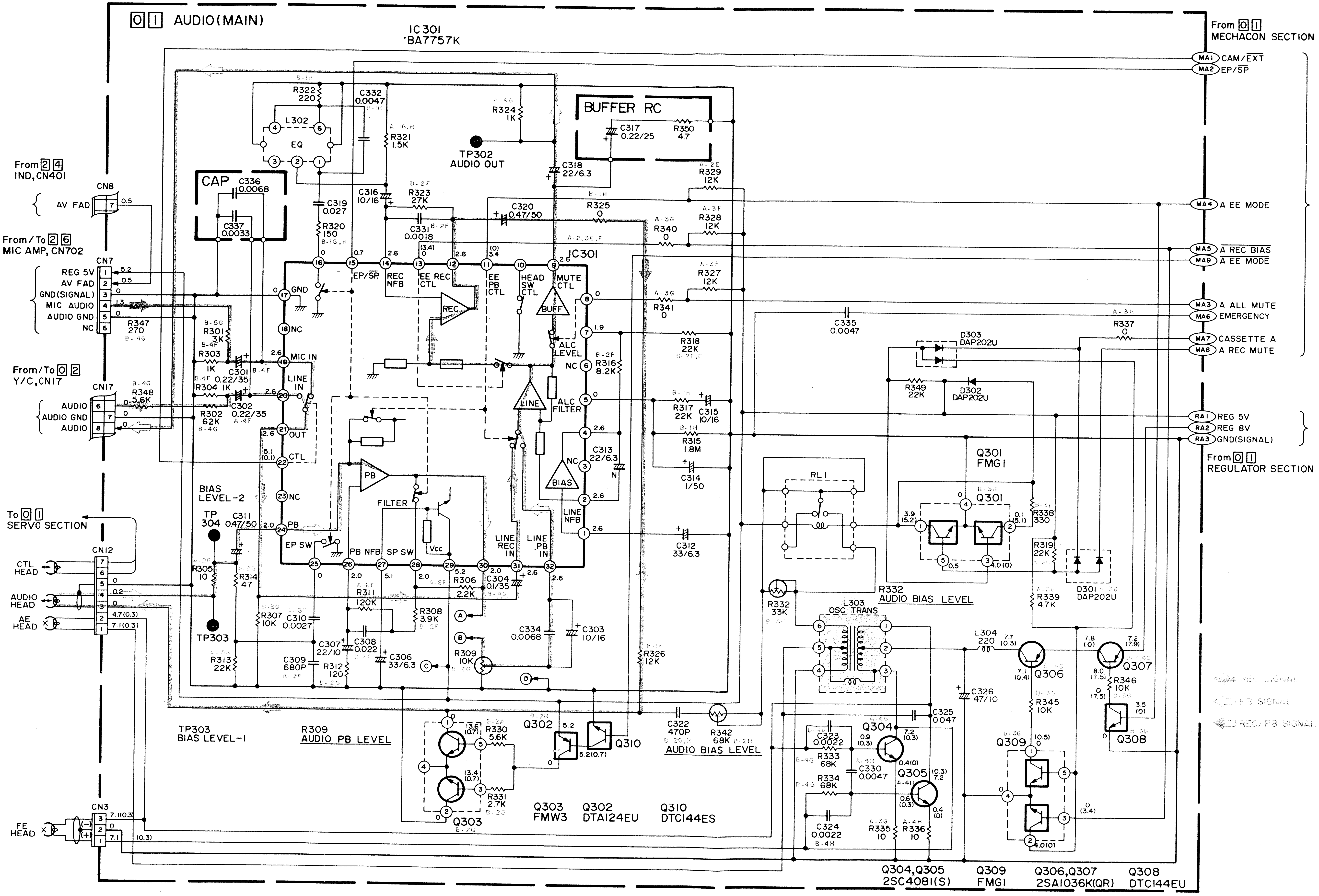


01 SERVO (MAIN)
CAPSTAN MOTOR DRIVE
IC103 M52410FP
Q103 2SC4081
IC104 NJM2904E
IC106 AFZ74A001X1
IC105 VC5026G
Q127 2SB798
Q126 2SB798
Q125 2SB798
CTL HEAD
AUDIO HEAD
AE HEAD
CN12
D103 MA704
To 01 AUDIO SECTION
TP108 PB CTL PULSE
REC CONTROL AMP
CAPSTAN TRAP
DRUM TRAP
3φ LOGIC
HALL AMP
MODE AMP
CAP FG (REC) 5.0 Vp-p
VOLUME Q107 DTA124EU
PB SWITCHING POINT
From/To 01 MECHACON SECTION
SEARCH
S MODE I
S MODE A
EP/SP
V PULSE ON
PAUSE
REC CTL DUTY
CAP CTL
CAP M CTL REF
CAP REV
CAP FWD
CAP FG
PB CTL PULSE
DRUM FF
From/To OPERATION UNIT
CN1
REG 5V
POWER SW
KEY SENS B
KEY SENS A
CAM/EXT SW
ALARM PULSE
DUB SW ON
GND(MOTOR)
GND(SIGNAL)
To 01 MECHACON SECTION
To 01 AUDIO SECTION
CN17
REG 8V
REMOTE SW
JACK SIG
AUDIO
AUDIO GND
V ALL MUTE
REMOTE
V PULSE
From/To 02 Y/C,CN17
CN18
SYNC
DRUM FF
V REC
CAM/EXT
V EE
EP/SP
V PB
V DET
UNREG 9.6V
From/To 02 Y/C,CN18
To 01 REGULATOR SECTION
CN19
PB FM
REC FM
PB COL
REC COL
S VIDEO
PB 5V
From/To 02 Y/C,CN19
3.58 MHz
PWM GEN
INTER PHASE
FILTER PHASE
SYNC DET
TP110 TEST
DRUM PHASE DET
DRUM PHASE SHIFT
REF COUNTER
CAP PHASE SHIFT
V PULSE WIDTH COUNTER
CAP F/V CONV
CAR REF COUNTER
CAP PHASE DETECTOR
DRUM F/V CONV
TRACKING MM
REC CTL COUNTER
DRUM PG COUNTER
DRUM FG COUNTER
OVERLAP1 COUNTER
OVERLAP2 COUNTER
PB SW MM
PULSE GEN
1,748 Hz
3,496 Hz
30 Hz
TP105 DRUM P/D
TP104 CAP P/D
CAP DIF AMP
VOLTAGE FOLLOWER
6V REG
DRUM DIF AMP
TP103 CTL DELAY MMV
EP/SP CTL DELAY
CONTROL DELAY MMV
SW LOGIC
TP106 DISCHARGE PULSE
DISCHARGE PULSE (REC/PB) 5.0 Vp-p
IC107 BU4011BF
Q114 FMG2
TRACKING VR
TP102 CTL DELAY REF
TP101 SW A
TP109 TP FM
Q106 2SK665
R103 TRACKING PRESET
TP111 DRUM FF
DRUM FF 4.0 Vp-p
SP 2,113 Hz
EP 704 Hz
1,800 Hz
Q120 DTC144EU
Q122 DTC144EU
Q110 DTC144EU
Q112 DTC144EU
Q121 DTC144EU
Q130 2SC4081
SW A 4.0 Vp-p
DRUM FG (REC) 4.6 Vp-p
CN16
COIL 2
HG 1(-)
COIL 3
HG 2(+)
HG BIAS(+)
HG BIAS(-)
COIL 1
HG 2(-)
HG 1(+)
HG 3(-)
MR 1
HG 3(+)
MR BIAS(+)
MR 2
MR BIAS(-)
From/To CAPSTAN MOTOR
GND(SIGNAL)
REG 5V
REG 8V
From/To 01 REGULATOR SECTION
CAP POWER UP
CAP POWER
CAP REF
GND(MOTOR)
DRUM POWER UP
To 01 REGULATOR SECTION
CN5
DRUM ON
DRUM PG
DEW SENSOR
DRUM FG
DRUM REF
CASSETTE SW
DRUM P ERR
END SENSOR LED
DRUM POWER
From/To 03 DRUM MDA CN254
CN15
TEST 0
TEST 1
TRACK P SET
CTL DELAY
TP FM
UNREG 9.6V
JIG
To MECHACON SECTION
CN11
SW B
SW C
V REC MUTE
V REC 8V
PB 5V
From/To PRE/REC AMP CN1
IC101 BU3721K
IC102 M51799FP
Q113 2SK665
Q111 2SK665
DRUM SERVO SIGNAL PATH
CAPSTAN SERVO SIGNAL PATH
0.3 Vp-p

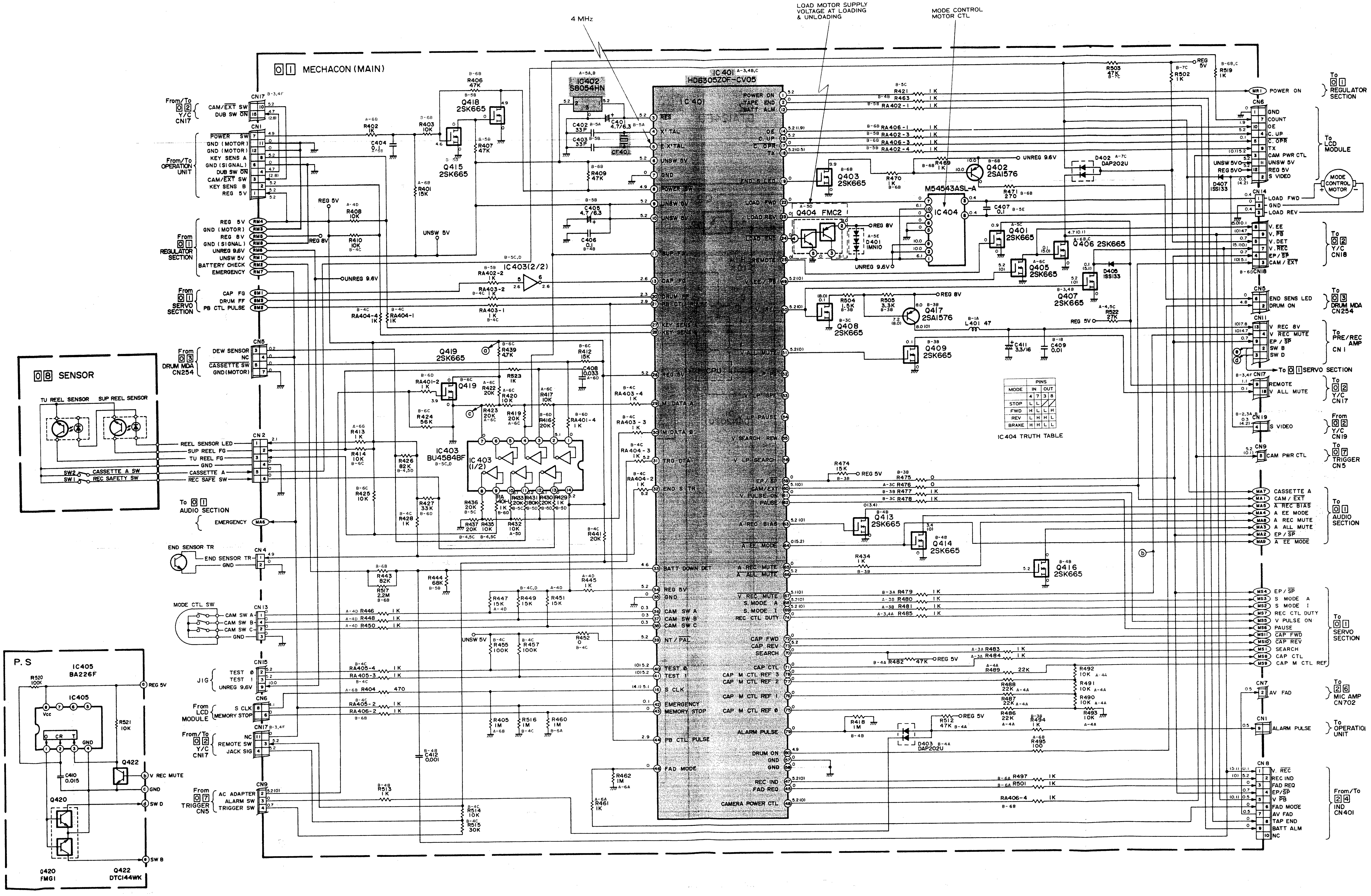
4.14 AUDIO SCHEMATIC DIAGRAM


H. TRAP
TRAP 301
OUT
IN
GND
IN
OUT
R354
0
A IN
B OUT
R355
0
C Vcc
D GND
R351
0
R353
0
R352
0
GND
IC 302
NJM2904E
Vcc


0 1 AUDIO (MAIN)
IC301
BA7757K
From 2 4
IND, CN401
CN8
AV FAD
From/To 2 6
MIC AMP, CN702
CN7
REG 5V
AV FAD
GND (SIGNAL)
MIC AUDIO
AUDIO GND
NC
R347
270
From/To 0 2
Y/C, CN17
CN17
AUDIO
AUDIO GND
AUDIO
R348
5.6K
To 0 1
SERVO SECTION
CN12
CTL HEAD
AUDIO HEAD
AE HEAD
CN3
FE HEAD
R322
220
C332
0.0047
L302
EQ
R321
1.5K
CAP
C336
0.0068
C337
0.0033
C319
0.027
R320
150
C316
10/16
R323
27K
C331
0.0018
R324
1K
TP302
AUDIO OUT
C318
22/6.3
C320
0.47/50
R325
0
BUFFER RC
C317
0.22/25
R350
4.7
R329
12K
R328
12K
R340
0
R327
12K
R341
0
R318
22K
R316
8.2K
R317
22K
C315
10/16
R315
1.8M
C314
1/50
C312
33/6.3
C313
22/6.3
EP/SP
REC NFB
EE REC CTL
EE PB CTL
HEAD SW CTL
MUTE CTL
GND
NC
MIC IN
LINE IN
OUT
CTL
NC
PB
REC
BUFF
ALC LEVEL
ALC FILTER
LINE
BIAS
LINE NFB
LINE REC IN
LINE PB IN
PB
FILTER
EP SW
PB NFB
SP SW
Vcc
R301
3K
R303
1K
C301
0.22/35
R304
1K
R302
62K
C302
0.22/35
BIAS LEVEL-2
TP 304
C311
0.47/50
R305
10
R314
47
TP303
R307
10K
C310
0.0027
R311
120K
R306
2.2K
C304
0.1/35
R308
3.9K
C334
0.0068
C303
10/16
R313
22K
C309
680P
C307
22/10
C308
0.022
R312
120
C306
33/6.3
R309
10K
R326
12K
C322
470P
R342
68K
AUDIO BIAS LEVEL
TP303
BIAS LEVEL-1
R309
AUDIO PB LEVEL
R330
5.6K
Q302
Q310
R331
2.7K
Q303
Q303 FMW3
Q302 DTA124EU
Q310 DTC144ES
R332
33K
RL1
C323
0.0022
R333
68K
R334
68K
C324
0.0022


01 AUDIO(MAIN)
IC301 BA7757K
From 01 MECHACON SECTION
MA1 CAM/EXT
MA2 EP/SP
MA4 A EE MODE
MA5 A REC BIAS
MA9 A EE MODE
MA3 A ALL MUTE
MA6 EMERGENCY
MA7 CASSETTE A
MA8 A REC MUTE
RA1 REG 5V
RA2 REG 8V
RA3 GND(SIGNAL)
From 01 REGULATOR SECTION
From 24 IND,CN401
CN8
AV FAD
From/To 26 MIC AMP, CN702
CN7
REG 5V
AV FAD
GND(SIGNAL)
MIC AUDIO
AUDIO GND
NC
From/To 02 Y/C,CN17
CN17
AUDIO
AUDIO GND
AUDIO
To 01 SERVO SECTION
CN12
CTL HEAD
AUDIO HEAD
AE HEAD
CN3
FE HEAD
BUFFER RC
CAP
EQ
L302
TP302 AUDIO OUT
TP 304
TP303
BIAS LEVEL-2
TP303 BIAS LEVEL-1
R309 AUDIO PB LEVEL
R342 AUDIO BIAS LEVEL
R332 AUDIO BIAS LEVEL
L303 OSC TRANS
RL1
GND
MIC IN
LINE IN
OUT
CTL
PB
EP SW
PB NFB
SP SW
LINE REC IN
LINE PB IN
LINE NFB
BIAS
ALC FILTER
ALC LEVEL
MUTE CTL
BUFF
HEAD SW CTL
EE PB CTL
EE REC CTL
REC NFB
EP/SP
REC
LINE
FILTER
Vcc
D303 DAP202U
D302 DAP202U
D301 DAP202U
Q301 FMG1
Q303 FMW3
Q302 DTA124EU
Q310 DTC144ES
Q304,Q305 2SC4081(S)
Q309 FMG1
Q306,Q307 2SA1036K(QR)
Q308 DTC144EU
R322 220
C332 0.0047
R324 1K
C317 0.22/25
R350 4.7
R321 1.5K
C318 22/6.3
R329 12K
C336 0.0068
C337 0.0033
C319 0.027
C316 10/16
R323 27K
C320 0.47/50
R325 0
R328 12K
R340 0
C331 0.0018
R320 150
R327 12K
R341 0
C335 0.0047
R337 0
R347 270
R301 3K
R303 1K
C301 0.22/35
R304 1K
R348 5.6K
R302 62K
C302 0.22/35
R318 22K
R316 8.2K
R349 22K
R317 22K
C315 10/16
R315 1.8M
C313 22/6.3
C314 1/50
C311 0.47/50
C312 33/6.3
R338 330
R319 22K
R339 4.7K
R305 10
R314 47
R306 2.2K
C304 0.1/35
R311 120K
R307 10K
C310 0.0027
R308 3.9K
C334 0.0068
C303 10/16
C307 22/10
C308 0.022
C309 680P
R312 120
C306 33/6.3
R309 10K
R313 22K
R326 12K
R332 33K
L304 220
C326 47/10
R345 10K
R346 10K
R330 5.6K
R331 2.7K
C322 470P
R342 68K
C325 0.047
C323 0.0022
R333 68K
C330 0.0047
R334 68K
C324 0.0022
R335 10
R336 10
REC SIGNAL
PB SIGNAL
REC/PB SIGNAL

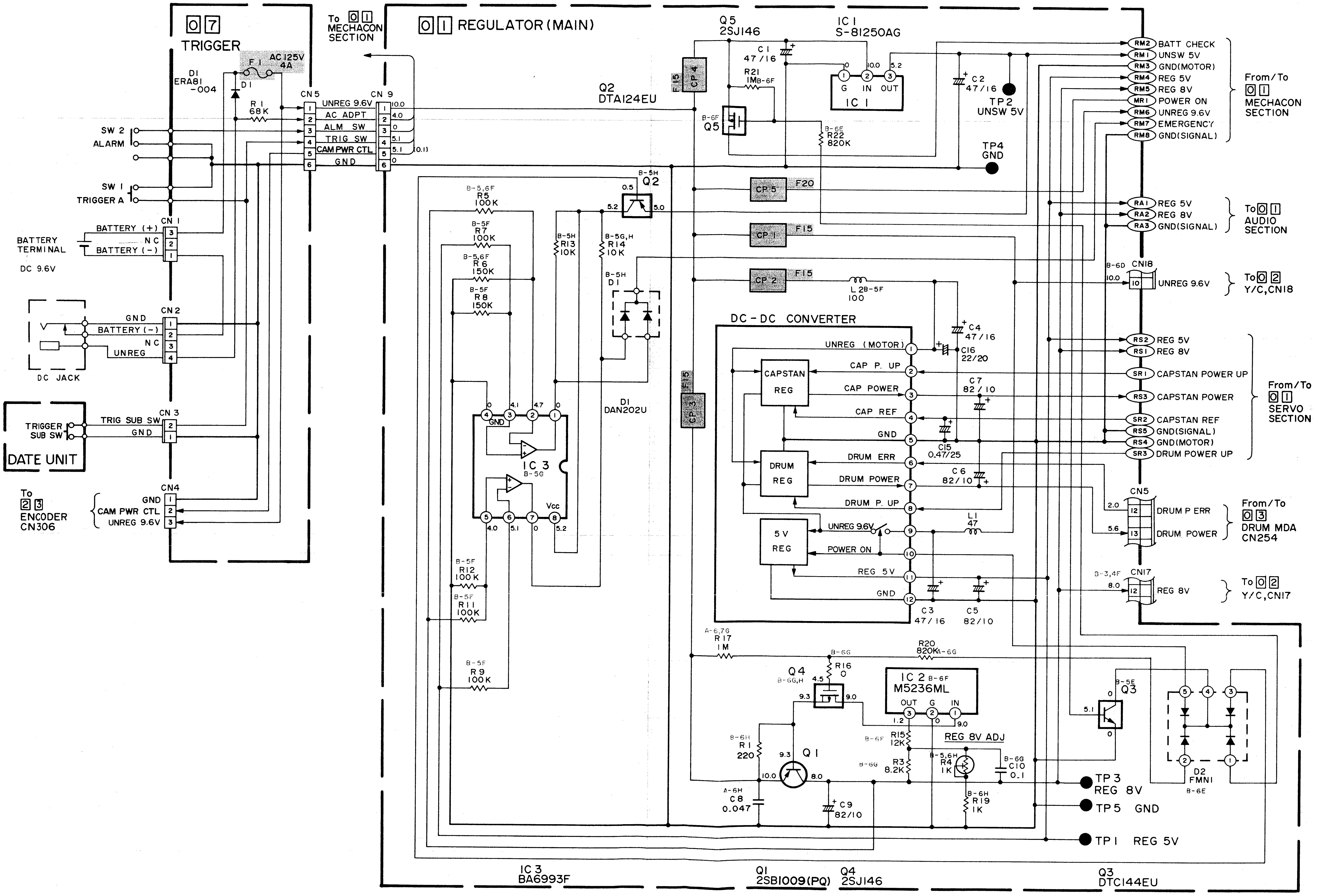
4.15 MECHACON SCHEMATIC DIAGRAM


4 MHz
LOAD MOTOR SUPPLY VOLTAGE AT LOADING & UNLOADING
MODE CONTROL MOTOR CTL
01 MECHACON (MAIN)
IC401 HD6305Z0F-CV05
IC402 S8054HN
IC403 BU4584BF
IC403 (2/2)
IC403 (1/2)
IC404 M54543ASL-A
Q401 2SK665
Q402 2SA1576
Q403 2SK665
Q404 FMC2
Q405 2SK665
Q406 2SK665
Q407 2SK665
Q408 2SK665
Q409 2SK665
Q413 2SK665
Q414 2SK665
Q415 2SK665
Q416 2SK665
Q417 2SA1576
Q418 2SK665
Q419 2SK665
D401 1MN10
D402 DAP202U
D403 DAP202U
D405 1SS133
D407 1SS133
CF401
From/To 02 Y/C CN17
From/To OPERATION UNIT
From 01 REGULATOR SECTION
From 01 SERVO SECTION
From 03 DRUM MDA CN254
08 SENSOR
TU REEL SENSOR
SUP REEL SENSOR
REEL SENSOR LED
SUP REEL FG
TU REEL FG
GND
CASSETTE A SW
REC SAFETY SW
To 01 AUDIO SECTION
EMERGENCY
END SENSOR TR
MODE CTL SW
JIG
From LCD MODULE
From/To 02 Y/C CN17
From 07 TRIGGER CN5
P.S
IC405 BA226F
Q420 FMG1
Q422 DTC144WK
REG 5V
V REC MUTE
GND
SW D
SW B
To 01 REGULATOR SECTION
POWER ON
To LCD MODULE
MODE CONTROL MOTOR
LOAD FWD
LOAD REV
To 02 Y/C CN18
To 03 DRUM MDA CN254
To PRE/REC AMP CN1
To 01 SERVO SECTION
To 02 Y/C CN17
From 02 Y/C CN19
To 07 TRIGGER CN5
To 01 AUDIO SECTION
To 01 SERVO SECTION
To 26 MIC AMP CN702
To OPERATION UNIT
From/To 24 IND CN401

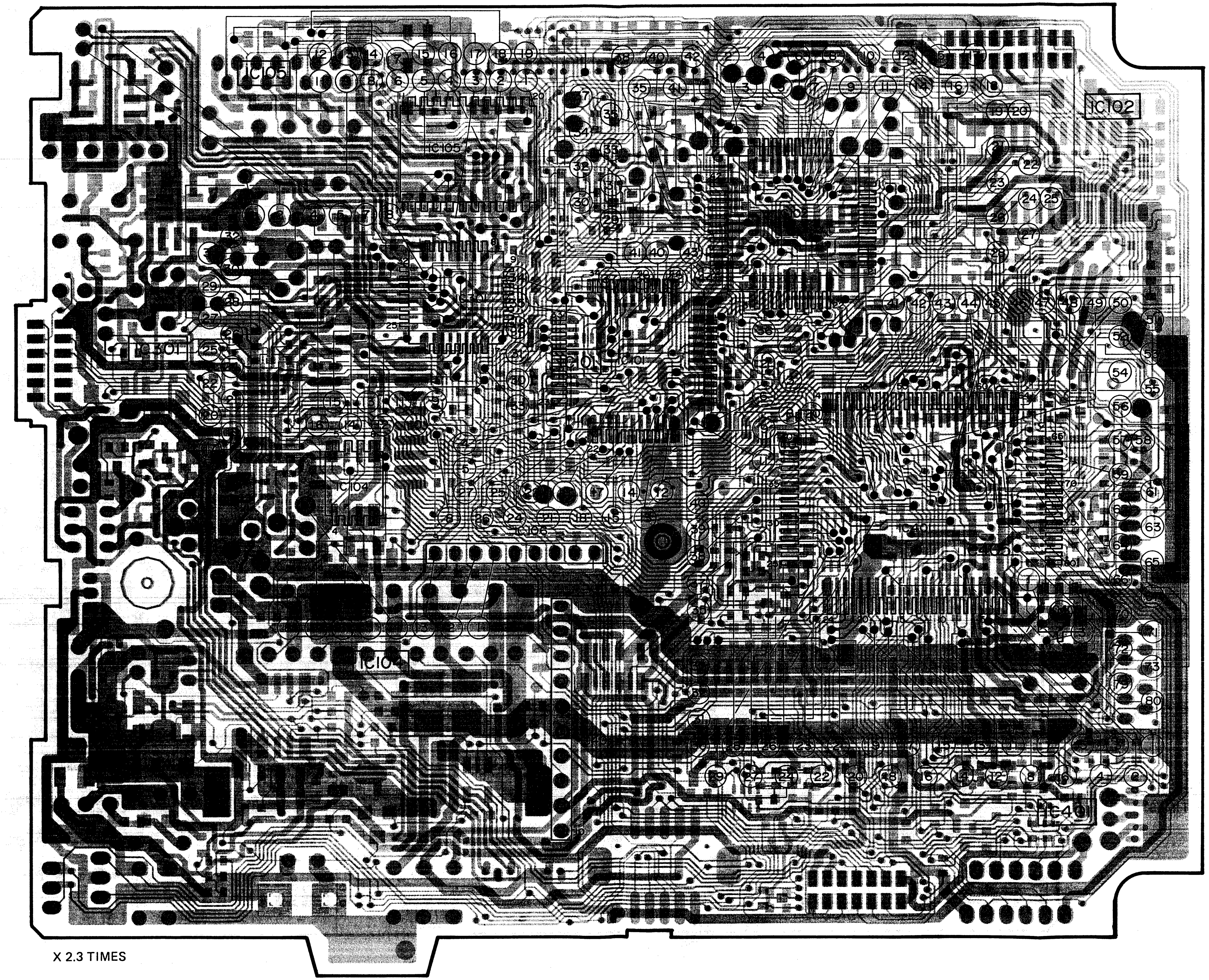
	PINS			
MODE	IN		OUT	
	4	7	3	8
STOP	L	L	/	/
FWD	H	L	L	H
REV	L	H	H	L
BRAKE	H	H	L	L

IC404 TRUTH TABLE

4.16 REGULATOR SCHEMATIC DIAGRAM


07 TRIGGER
D1 ERA81 -004
F1 AC125V 4A
D1
R1 68K
SW 2 ALARM
SW 1 TRIGGER A
BATTERY TERMINAL
DC 9.6V
CN1
BATTERY (+)
NC
BATTERY (-)
DC JACK
CN2
GND
BATTERY (-)
NC
UNREG
CN3
TRIGGER SUB SW
TRIG SUB SW
GND
DATE UNIT
To 23 ENCODER CN306
CN4
GND
CAM PWR CTL
UNREG 9.6V
CN5
CN 9
UNREG 9.6V
AC ADPT
ALM SW
TRIG SW
CAM PWR CTL
GND
To 01 MECHACON SECTION
01 REGULATOR (MAIN)
Q2 DTA124EU
Q5 2SJ146
IC1 S-81250AG
C1 47/16
R21 1M
R22 820K
G IN OUT
IC 1
C2 47/16
TP2 UNSW 5V
TP4 GND
CP4 F15
CP5 F20
CP1 F15
CP2 F15
CP3 F15
L 28-5F 100
Q2
D1
R5 100K
R7 100K
R6 150K
R8 150K
R13 10K
R14 10K
D1 DAN202U
IC 3
Vcc
R12 100K
R11 100K
R9 100K
DC-DC CONVERTER
UNREG (MOTOR)
CAP P. UP
CAP POWER
CAP REF
GND
DRUM ERR
DRUM POWER
DRUM P. UP
UNREG 9.6V
POWER ON
REG 5V
GND
CAPSTAN REG
DRUM REG
5V REG
C4 47/16
C16 22/20
C7 82/10
C15 0.47/25
C6 82/10
L1 47
C3 47/16
C5 82/10
R17 1M
R20 820K
Q4
R16 0
IC 2 M5236ML
OUT G IN
REG 8V ADJ
R1 220
Q1
R15 12K
R3 8.2K
R4 1K
C10 0.1
R19 1K
C8 0.047
C9 82/10
Q3
D2 FMN1
TP3 REG 8V
TP5 GND
TP1 REG 5V
RM2 BATT CHECK
RM1 UNSW 5V
RM3 GND(MOTOR)
RM4 REG 5V
RM5 REG 8V
MR1 POWER ON
RM6 UNREG 9.6V
RM7 EMERGENCY
RM8 GND(SIGNAL)
From/To 01 MECHACON SECTION
RA1 REG 5V
RA2 REG 8V
RA3 GND(SIGNAL)
To 01 AUDIO SECTION
CN18
UNREG 9.6V
To 02 Y/C,CN18
RS2 REG 5V
RS1 REG 8V
SR1 CAPSTAN POWER UP
RS3 CAPSTAN POWER
SR2 CAPSTAN REF
RS5 GND(SIGNAL)
RS4 GND(MOTOR)
SR3 DRUM POWER UP
From/To 01 SERVO SECTION
CN5
DRUM P ERR
DRUM POWER
From/To 03 DRUM MDA CN254
CN17
REG 8V
To 02 Y/C,CN17
IC3 BA6993F
Q1 2SB1009(PQ)
Q4 2SJ146
Q3 DTC144EU

4.17 MAIN BOARD THROUGH HOLE LOCATION

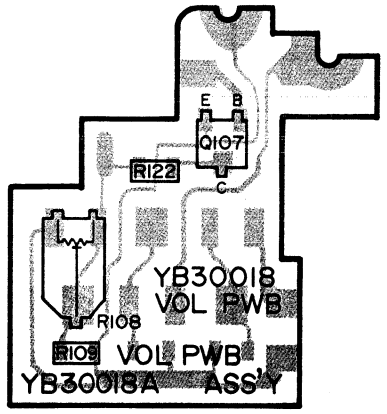


IC105
IC102
IC301
IC101
IC104
IC106
IC401

X 2.3 TIMES

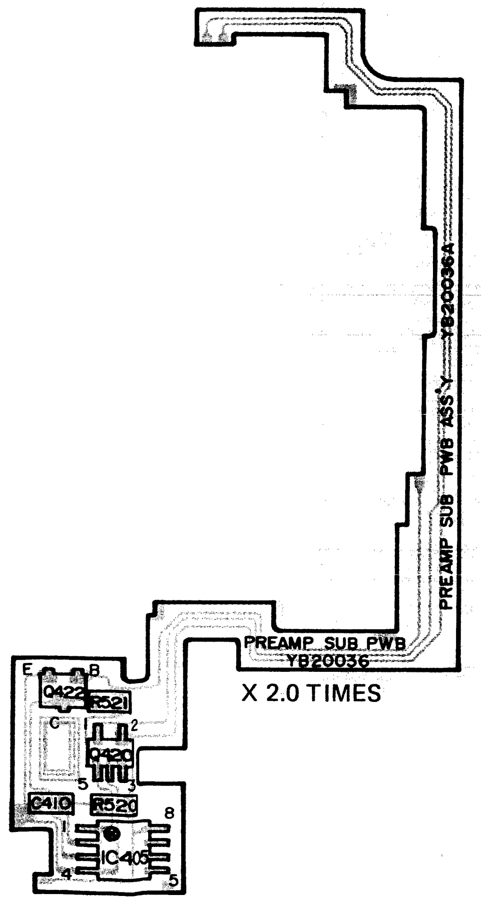
4.18 MAIN CIRCUIT BOARD

– VOLUME –

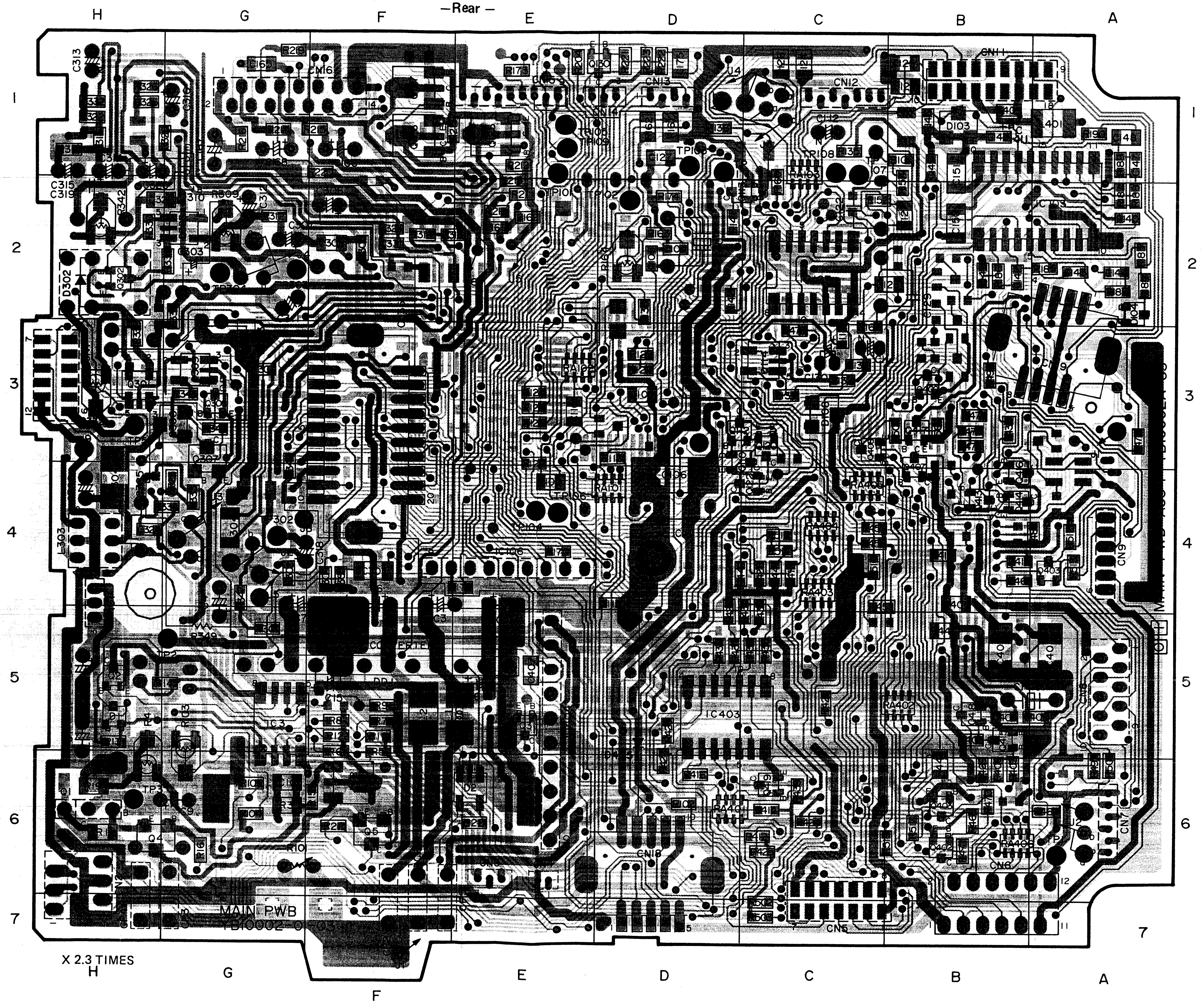

E B
Q107
R122
C
YB30018
VOL PWB
R108
R109
VOL PWB
YB30018A ASS'Y

X 2.0 TIMES

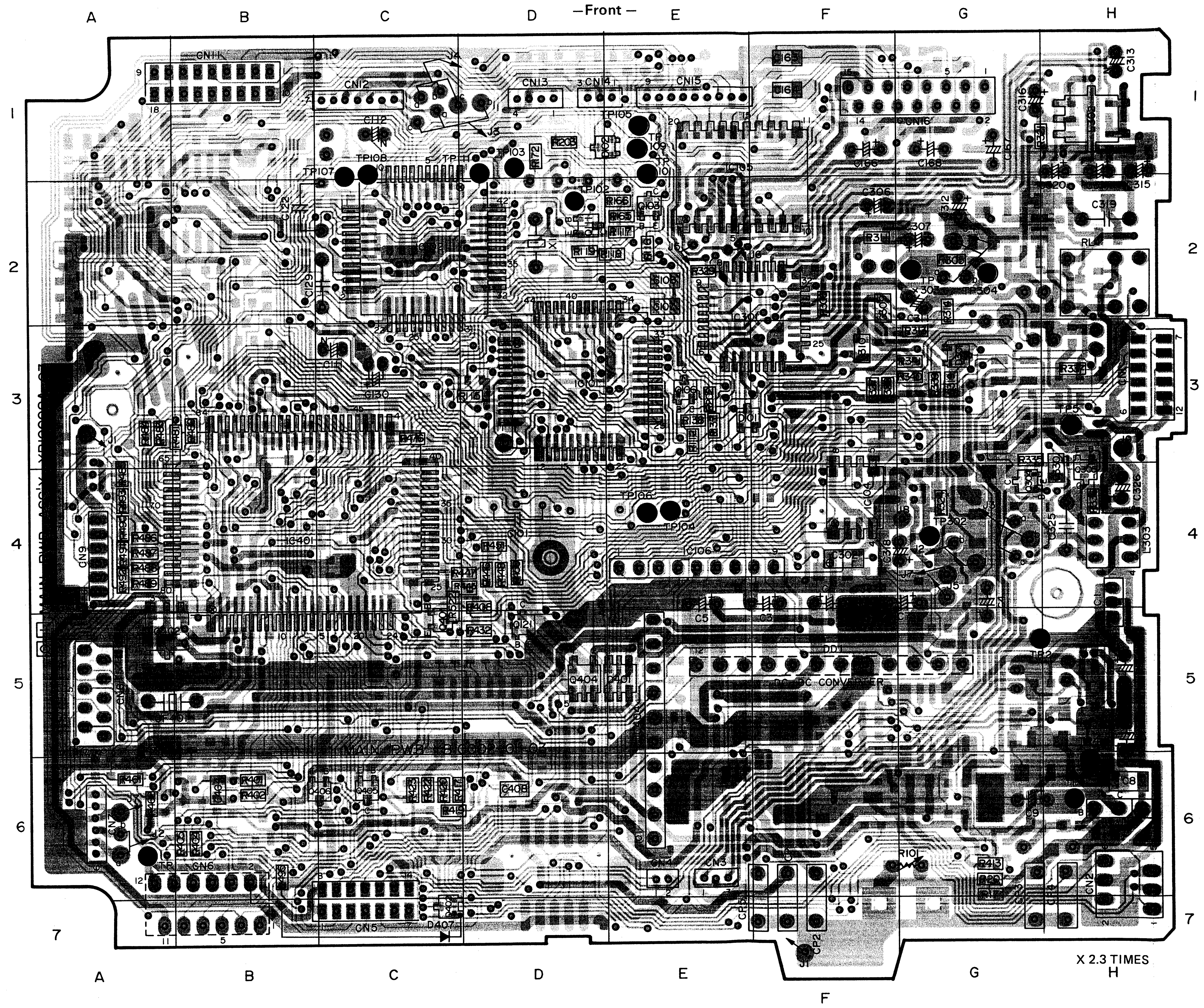
– PREAMP SUB –


PREAMP SUB PWB ASS'Y YB20036A
PREAMP SUB PWB
YB20036
E B
Q422
R521
C
Q420
C410
R520
IC405
8
5

X 2.0 TIMES


–Rear–
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
CN11
CN12
CN13
CN14
CN16
CN9
CN5
CN6
CN18
IC403
RA402
RA403
RA401
RA101
IC106
D103
D302
C313
C315
C319
R342
R309
L303
Q303
Q307
Q4
Q5
TP3
TP101
TP102
TP103
TP104
TP106
TP108
TP109
C3
C9
R10
IC3
MAIN PWB
YB10002-0

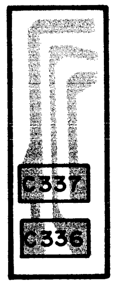
X 2.3 TIMES


—Front—
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
CN11
CN12
CN13
CN14
CN15
CN16
TP107
TP108
TP111
TP103
TP105
TP109
TP101
TP102
TP106
TP104
TP302
TP304
IC101
IC401
IC105
DC-DC CONVERTER
MAIN PWB
CN9
CN6
CN5
CN4
CN3
CN2
J1
CP2
R101
D407

X 2.3 TIMES

— CAP —

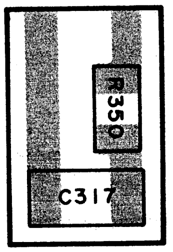
X 4.0 TIMES



CAP PWB ASS'Y
YB20042A-C
CAP PWB
YB20042

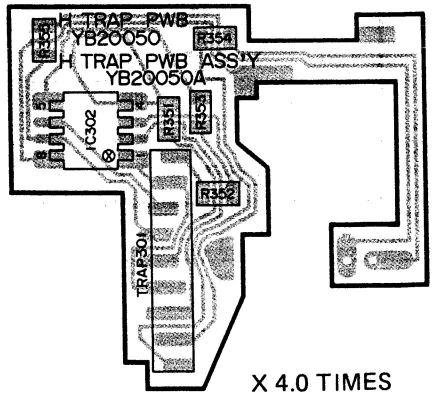
— BUFFER RC —

X 4.0 TIMES



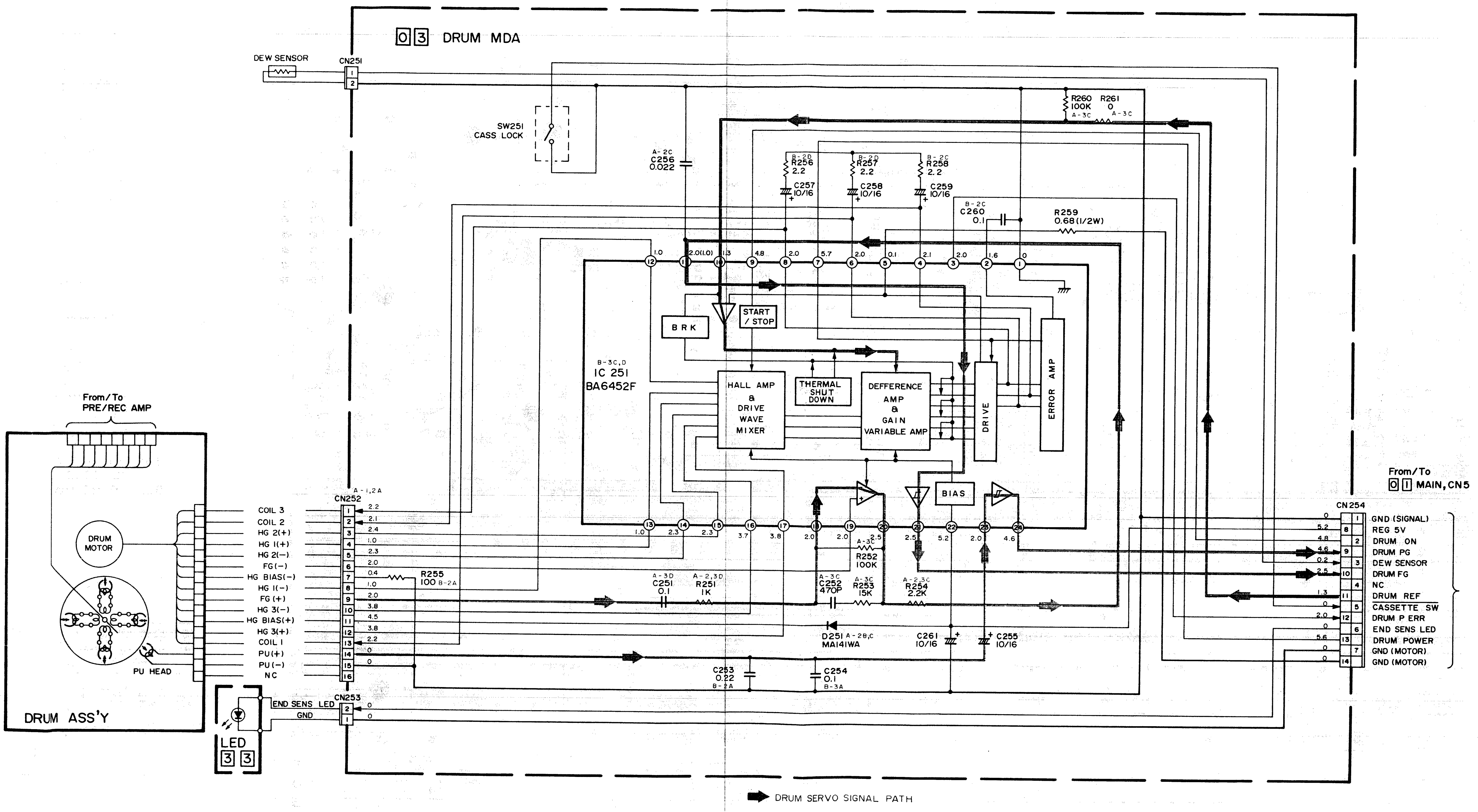
BUFFER RC PWB ASS'Y
YB20049A
BUFFER RC PWB
YB20049

— H. TRAP —


H TRAP PWB
YB20050
H TRAP PWB ASS'Y
YB20050A
R354
R351
R353
R352
IC302
TRAP301

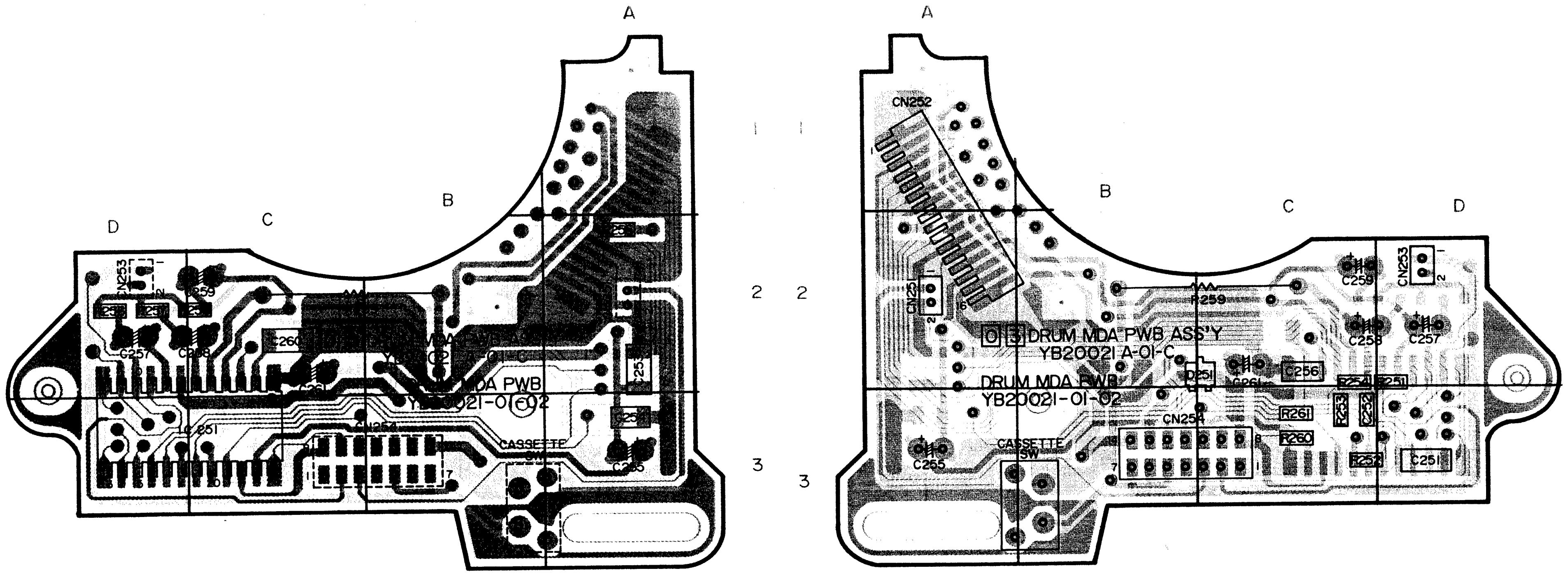
X 4.0 TIMES

4.19 DRUM MDA SCHEMATIC DIAGRAM


03 DRUM MDA
DEW SENSOR
CN251
SW251
CASS LOCK
A-2C
C256
0.022
B-2D
R256
2.2
C257
10/16
B-2D
R257
2.2
C258
10/16
B-2C
R258
2.2
C259
10/16
B-2C
C260
0.1
R259
0.68(1/2W)
R260
100K
A-3C
R261
0
A-3C
B-3C,D
IC 251
BA6452F
BRK
START / STOP
HALL AMP & DRIVE WAVE MIXER
THERMAL SHUT DOWN
DEFFERENCE AMP & GAIN VARIABLE AMP
DRIVE
ERROR AMP
BIAS
From/To
PRE/REC AMP
DRUM MOTOR
PU HEAD
DRUM ASS'Y
A-1,2A
CN252
COIL 3
COIL 2
HG 2(+)
HG 1(+)
HG 2(−)
FG(−)
HG BIAS(−)
HG 1(−)
FG(+)
HG 3(−)
HG BIAS(+)
HG 3(+)
COIL 1
PU(+)
PU(−)
NC
R255
100 B-2A
A-3D
C251
0.1
A-2,3D
R251
1K
A-3C
C252
470P
A-3C
R252
100K
A-3C
R253
15K
A-2,3C
R254
2.2K
D251 A-2B,C
MA141WA
C261
10/16
C255
10/16
C253
0.22
B-2A
C254
0.1
B-3A
LED
33
END SENS LED
GND
CN253
From/To
01 MAIN, CN5
CN254
GND (SIGNAL)
REG 5V
DRUM ON
DRUM PG
DEW SENSOR
DRUM FG
NC
DRUM REF
CASSETTE SW
DRUM P ERR
END SENS LED
DRUM POWER
GND (MOTOR)
GND (MOTOR)
DRUM SERVO SIGNAL PATH

4.20 DRUM MDA AND UPPER DRUM CIRCUIT BOARDS

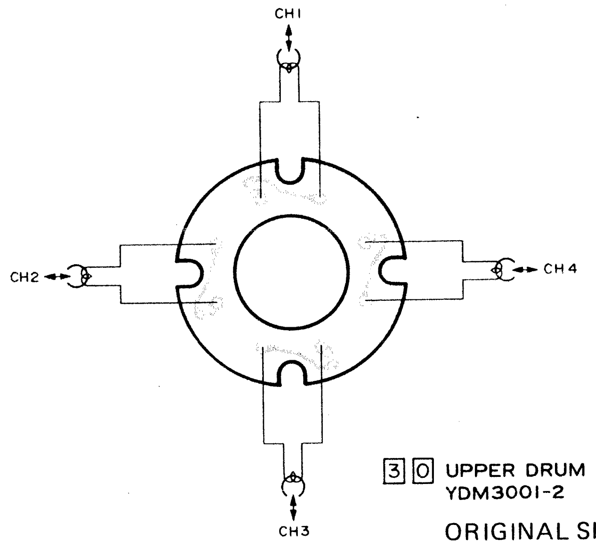
– DRUM MDA –



– Rear –
– Front –
A
B
C
D
2
3
CN251
CN252
CN253
CN254
C251
C252
C255
C256
C257
C258
C259
C260
C261
D251
R251
R252
R253
R254
R259
R260
R261
CASSETTE SW
03 DRUM MDA PWB ASS'Y
YB20021 A-01-C
DRUM MDA PWB
YB20021-01-02

X 2.0 TIMES

– UPPER DRUM –



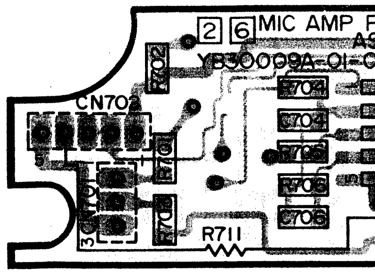
CH1
CH2
CH3
CH4

30 UPPER DRUM PWB
YDM3001-2

ORIGINAL SIZE

4.21 MIC AMP, JACK, MIC JACK AND TRIGGER CIRCUIT BO

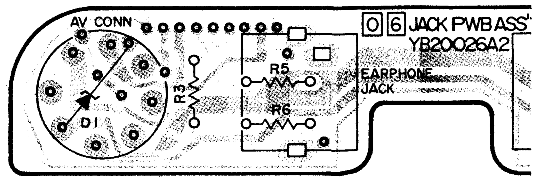
– MIC AMP –



–Rear –
26 MIC AMP PWB ASS'Y
YB30009A-01-C
CN701
CN702
R701
R702
R703
R704
R705
R706
R708
R709
R710
R711
C704
C706
IC701
MIC AMP PWB
YB30009-01-01

X 4.0 TIMES

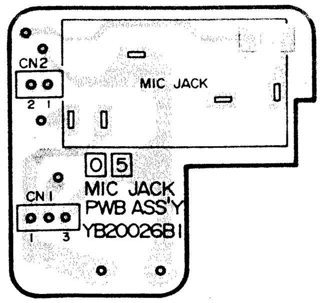
– JACK –



AV CONN
D1
R3
R5
R6
06 JACK PWB ASS'
YB20026A2
EARPHONE JACK

X 2.0 TIMES

– MIC JACK –



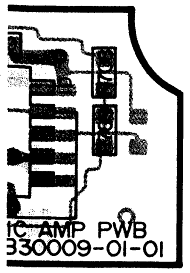
CN2
2 1
CN1
1 3
MIC JACK
05 MIC JACK PWB ASS'Y
YB20026B1

X 4.0 TIMES

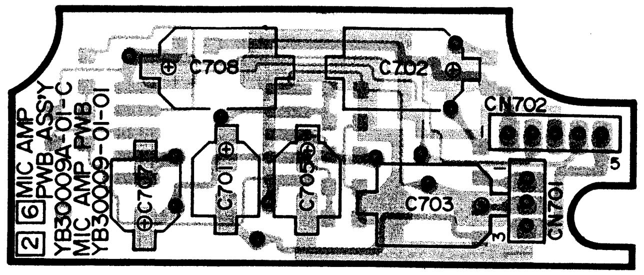
ND TRIGGER CIRCUIT BOARDS

4.22 MIC AMP AND JACK SCHEMATIC DIAGRAMS

– MIC AMP –

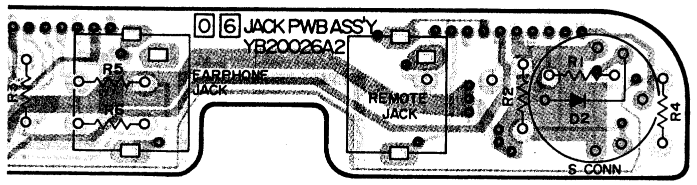

IC AMP PWB
330009-01-01

– Front –


C708
C702
CN702
C707
C701
C705
C703
CN701
5
1
3
2 6 MIC AMP PWB ASS'Y
YB30009A-01-C
MIC AMP PWB
YB30009-01-01

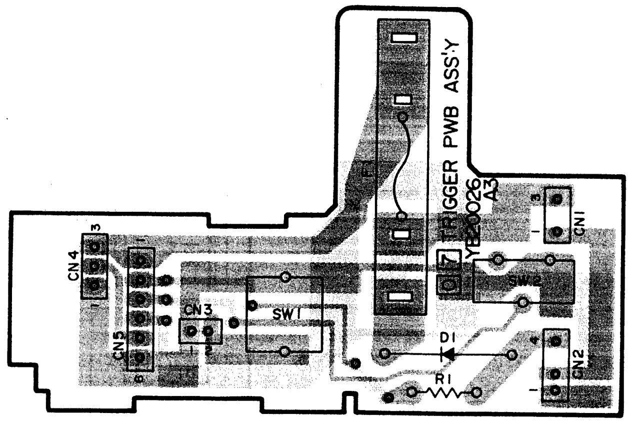
X 4.0 TIMES

– JACK –

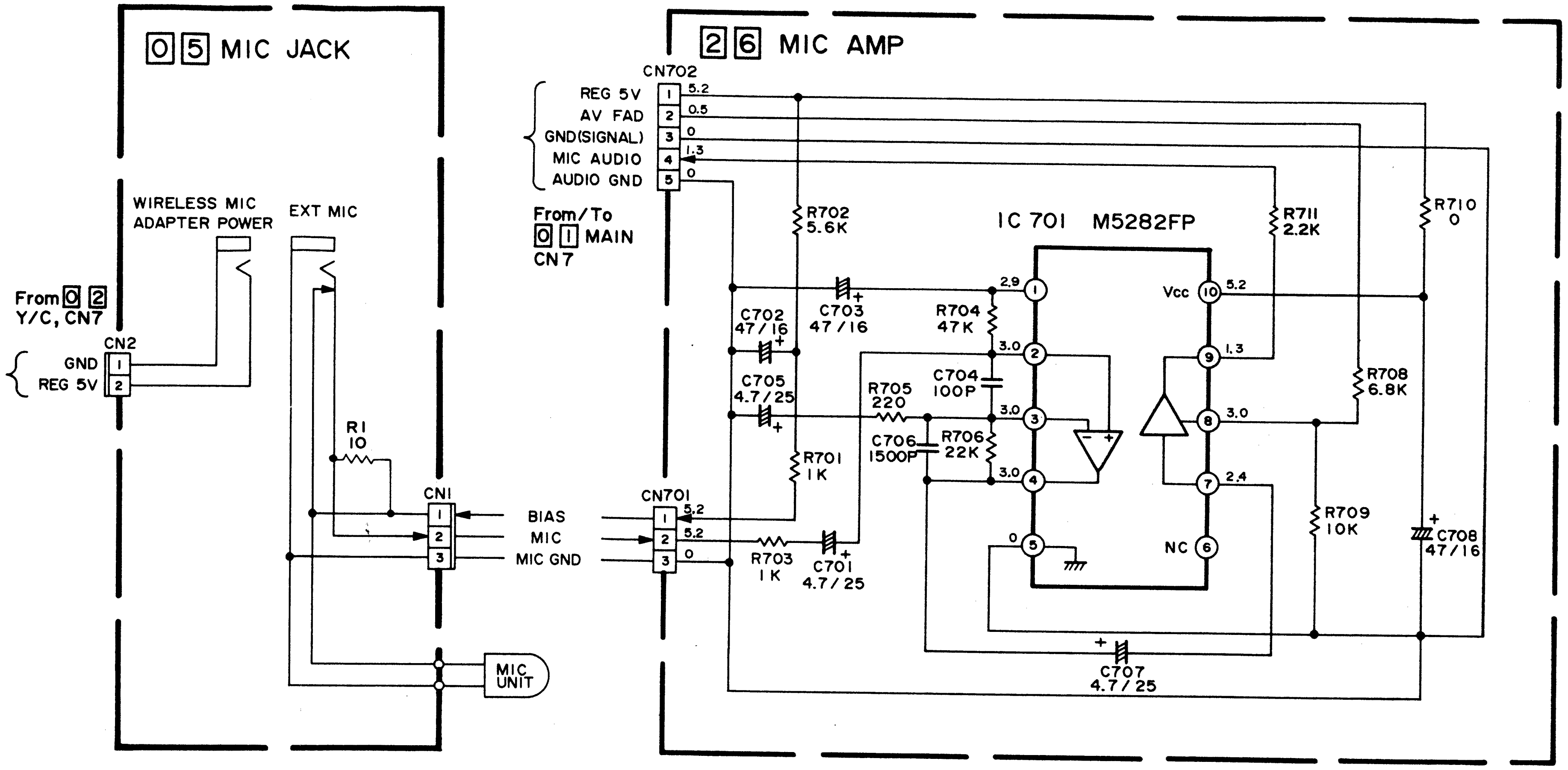

0 6 JACK PWB ASS'Y
YB20026A2
EARPHONE JACK
REMOTE JACK
R5
R1
R2
D2
R4
S-CONN

X 2.0 TIMES

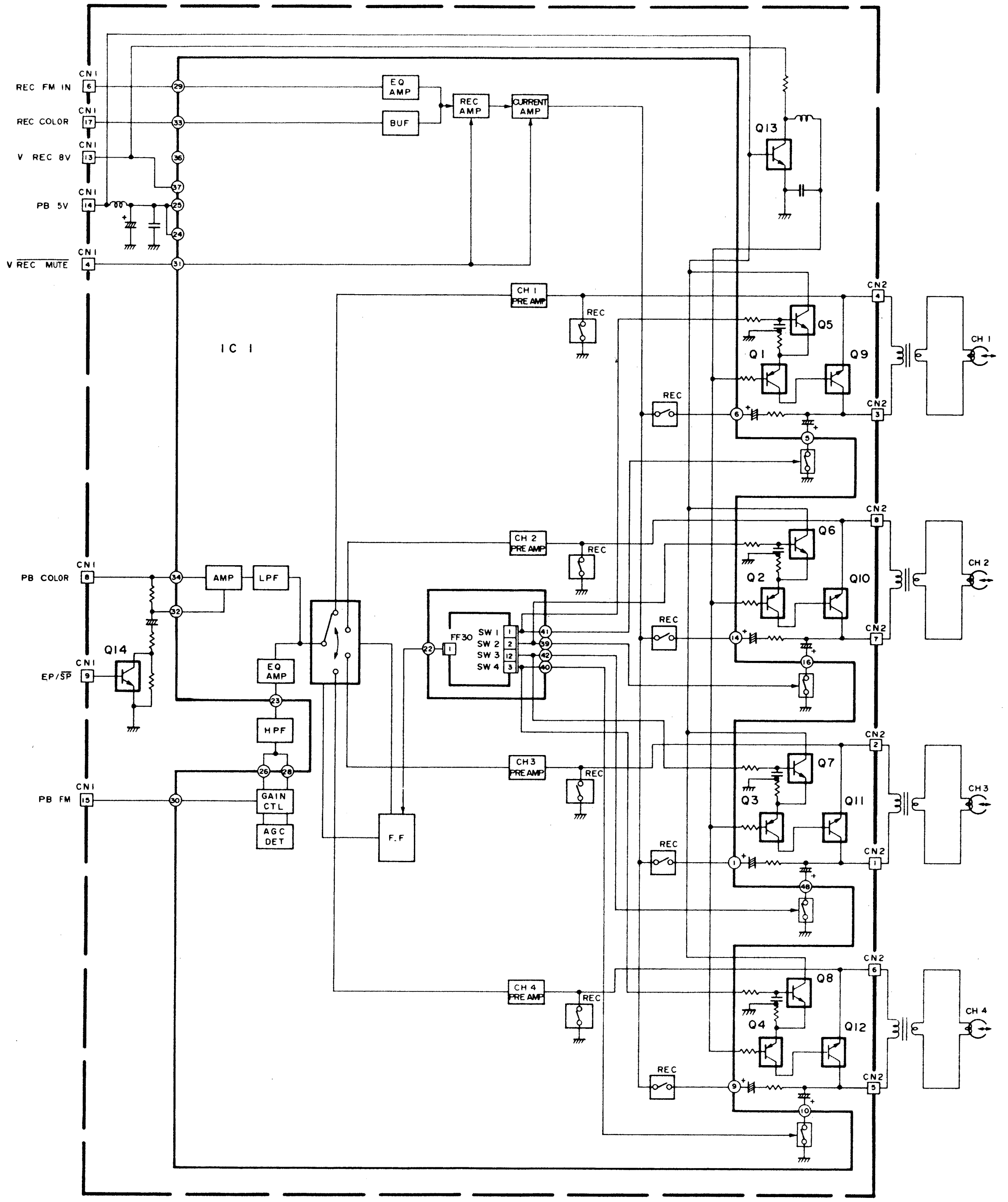
– TRIGGER –


TRIGGER PWB ASS'Y
0 7 YB20026 A3
CN4
CN5
CN3
SW1
D1
R1
CN1
CN2

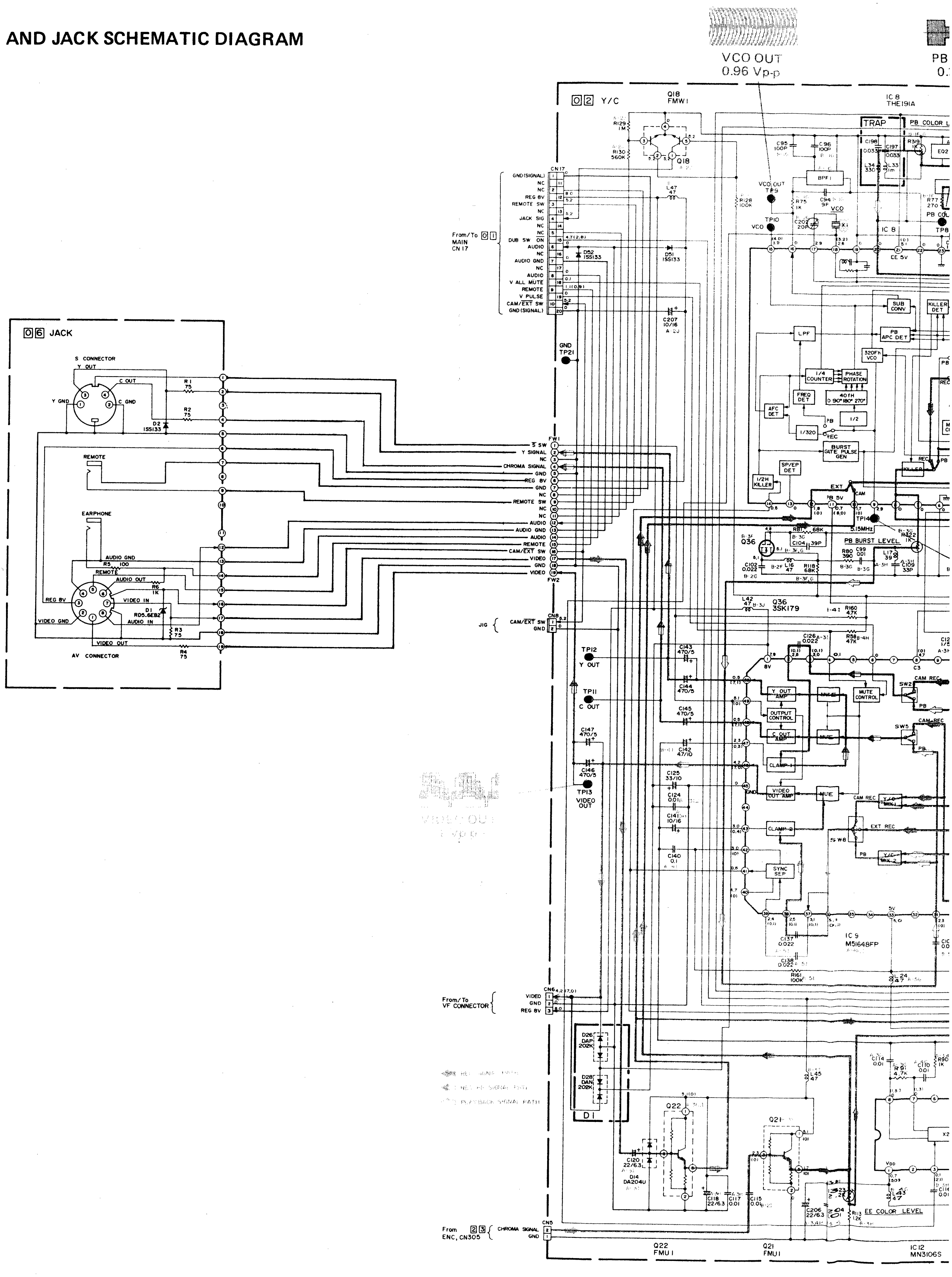
X 4.0 TIMES

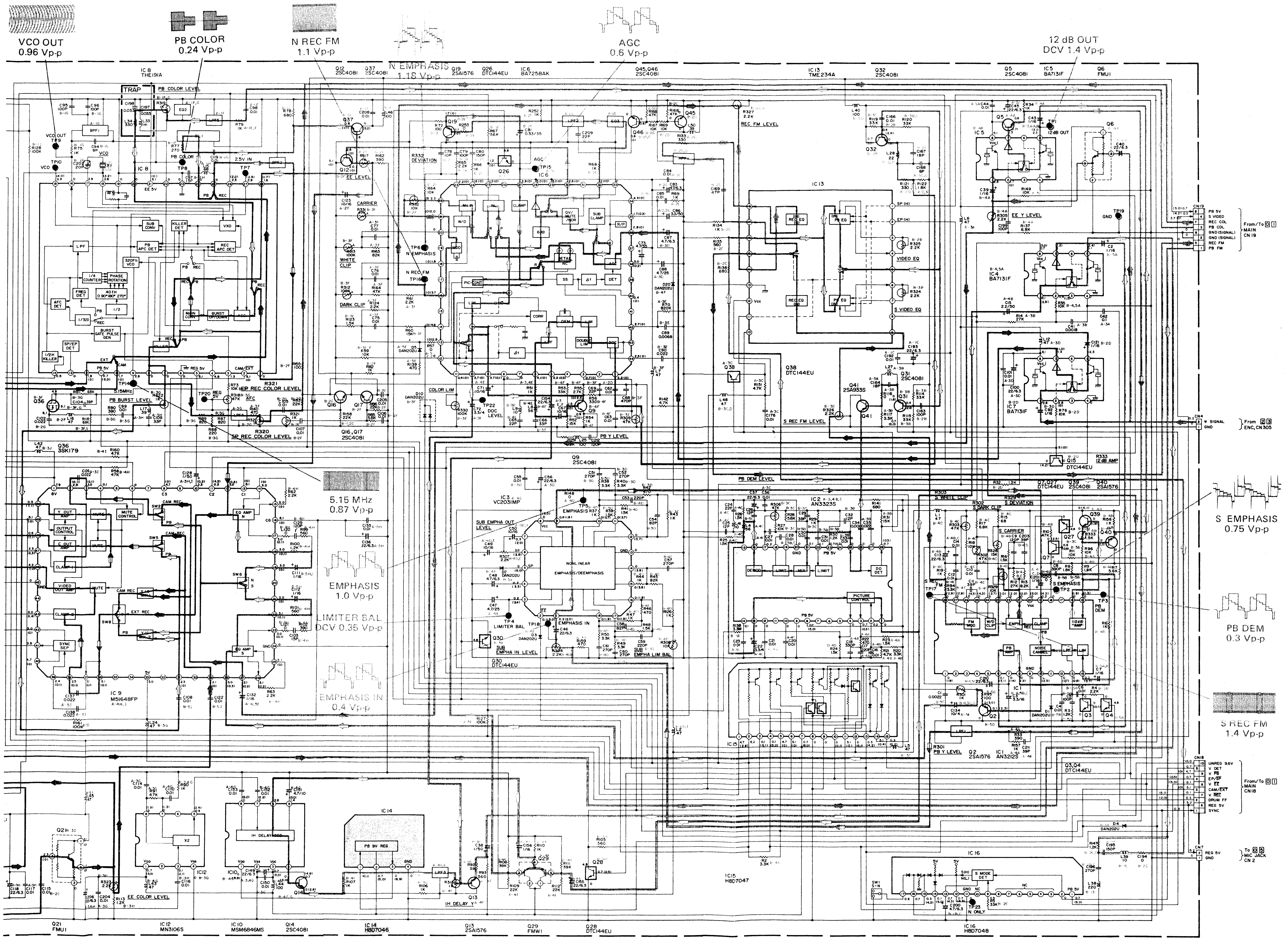

0 5 MIC JACK
WIRELESS MIC ADAPTER POWER
EXT MIC
From 0 2 Y/C, CN7
CN2
GND
REG 5V
R1 10
CN1
BIAS
MIC
MIC GND
MIC UNIT
2 6 MIC AMP
CN702
REG 5V
AV FAD
GND(SIGNAL)
MIC AUDIO
AUDIO GND
From/To 0 1 MAIN CN7
R702 5.6K
C702 47/16
C703 47/16
C705 4.7/25
R701 1K
CN701
R703 1K
C701 4.7/25
R704 47K
R705 220
C704 100P
C706 1500P
R706 22K
IC 701 M5282FP
Vcc
NC
R711 2.2K
R710 0
R708 6.8K
R709 10K
C708 47/16
C707 4.7/25

4.23 PRE/REC AMP BLOCK DIAGRAM


REC FM IN
CN1 6
REC COLOR
CN1 17
V REC 8V
CN1 13
PB 5V
CN1 14
V REC MUTE
CN1 4
PB COLOR
CN1 8
EP/SP
CN1 9
PB FM
CN1 15
IC 1
EQ AMP
BUF
REC AMP
CURRENT AMP
Q13
CH 1 PRE AMP
CH 2 PRE AMP
CH 3 PRE AMP
CH 4 PRE AMP
REC
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q14
CN2
CH 1
CH 2
CH 3
CH 4
AMP
LPF
EQ AMP
HPF
GAIN CTL
AGC DET
FF30
SW 1
SW 2
SW 3
SW 4
F.F

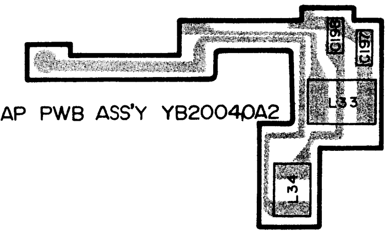
4.24 Y/C AND JACK SCHEMATIC DIAGRAM


VCO OUT
0.96 Vp-p
PB
02 Y/C
Q18 FMW1
IC 8 THE191A
TRAP
PB COLOR L
BPF1
VCO
VCO OUT TP9
TP10
CN17
From/To 01 MAIN CN17
GND(SIGNAL)
NC
REG 8V
REMOTE SW
JACK SIG
DUB SW ON
AUDIO
AUDIO GND
V ALL MUTE
REMOTE
V PULSE
CAM/EXT SW
GND(SIGNAL)
D52 1SS133
D51 1SS133
C207 10/16
GND TP21
LPF
PB APC DET
SUB CONV
KILLER DET
320FH VCO
1/4 COUNTER
PHASE ROTATION
FREQ DET
40FH 0°90°180°270°
AFC DET
1/320
1/2
BURST GATE PULSE GEN
SP/EP DET
1/2H KILLER
06 JACK
S CONNECTOR
Y OUT
C OUT
Y GND
C GND
R1 75
R2 75
D2 1SS133
REMOTE
EARPHONE
AUDIO GND
R5 100
REMOTE
AUDIO OUT
R6 1K
REG 8V
VIDEO IN
D1 RD5.6EB2
AUDIO IN
VIDEO GND
VIDEO OUT
R3 75
R4 75
AV CONNECTOR
FW1
S SW
Y SIGNAL
NC
CHROMA SIGNAL
GND
REG 8V
REMOTE SW
AUDIO
AUDIO GND
CAM/EXT SW
VIDEO
FW2
Q36 3SK179
PB BURST LEVEL
L42
R160 47K
JIG
CN8
CAM/EXT SW
GND
TP12 Y OUT
TP11 C OUT
TP13 VIDEO OUT
Y OUT AMP
OUTPUT CONTROL
C OUT AMP
CLAMP
VIDEO OUT AMP
MUTE
CLAMP
SYNC SEP
IC 9 M51648FP
SW2
SW5
SW6
CAM REC
EXT REC
From/To VF CONNECTOR
CN6
VIDEO
GND
REG 8V
D26 DAP 202K
D28 DAN 202K
D1
Q22
Q21
D14 DA204U
EE COLOR LEVEL
From 23 ENC, CN305
CN5
CHROMA SIGNAL
GND
Q22 FMU1
Q21 FMU1
IC12 MN3106S


VCO OUT 0.96 Vp-p
PB COLOR 0.24 Vp-p
N REC FM 1.1 Vp-p
N EMPHASIS 1.18 Vp-p
AGC 0.6 Vp-p
12 dB OUT DCV 1.4 Vp-p
IC 8 THE191A
Q12 2SC4081
Q37 2SC4081
Q19 2SA1576
Q26 DTC144EU
IC 6 BA7258AK
Q45,Q46 2SC4081
IC 13 TME234A
Q32 2SC4081
Q5 2SC4081
IC5 BA7131F
Q6 FMU1
TRAP
PB COLOR LEVEL
EE LEVEL
CARRIER
R332 DEVIATION
WHITE CLIP
DARK CLIP
REC FM LEVEL
EE Y LEVEL
VIDEO EQ
S VIDEO EQ
IC4 BA7131F
IC7 BA7131F
Q38 DTC144EU
Q41 2SA933S
Q31 2SC4081
S REC FM LEVEL
EP REC COLOR LEVEL
SP REC COLOR LEVEL
PB BURST LEVEL
Q36 3SK179
Q16,Q17 2SC4081
COLOR LIM
DOC LEVEL
PB Y LEVEL
R333 12dB AMP
Q15 DTC144EU
5.15 MHz 0.87 Vp-p
EMPHASIS 1.0 Vp-p
LIMITER BAL DCV 0.35 Vp-p
EMPHASIS IN 0.4 Vp-p
IC 9 M51648FP
IC3 VC2031MP
Q9 2SC4081
SUB EMPHA OUT LEVEL
NONLINEAR EMPHASIS/DEEMPHASIS
TP4 LIMITER BAL
SUB EMPHA IN LEVEL
SUB EMPHA LIM BAL
Q30 DTC144EU
PB DEM LEVEL
IC2 AN3323S
S WHITE CLIP
S DARK CLIP
S DEVIATION
Q7,Q27 DTC144EU
Q39 2SC4081
Q40 2SA1576
S CARRIER
S EMPHASIS
S EMPHASIS 0.75 Vp-p
PB DEM 0.3 Vp-p
S REC FM 1.4 Vp-p
PICTURE CONTROL
IC15
IC 1
PB Y LEVEL
Q2 2SA1576
IC1 AN3212S
Q3,Q4 DTC144EU
CN19
PB 5V
S VIDEO
REC COL
PB COL
GND (SIGNAL)
GND (SIGNAL)
REC FM
PB FM
From/To 0 1 MAIN CN19
CN4
SIGNAL
GND
From 2 3 ENC, CN305
CN18
UNREG 9.6V
V DET
V PB
EP/SP
V EE
CAM/EXT
V REC
DRUM FF
REG 5V
SYNC
From/To 0 1 MAIN CN18
CN7
REG 5V
GND
To 6 5 MIC JACK CN 2
IC14
PB 9V REG
IH DELAY
IH DELAY Y
EE COLOR LEVEL
IC15 HBD7047
IC 16
S MODE DET
TP 23 N ONLY
Q21 FMU1
IC12 MN3106S
IC10 MSM6846MS
Q14 2SC4081
IC14 HBD7046
Q13 2SA1576
Q29 FMW1
Q28 DTC144EU
IC16 HBD7048

4.25 Y/C CIRCUIT BOARD

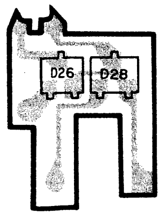
— TRAP —



TRAP PWB ASS'Y YB20040A2

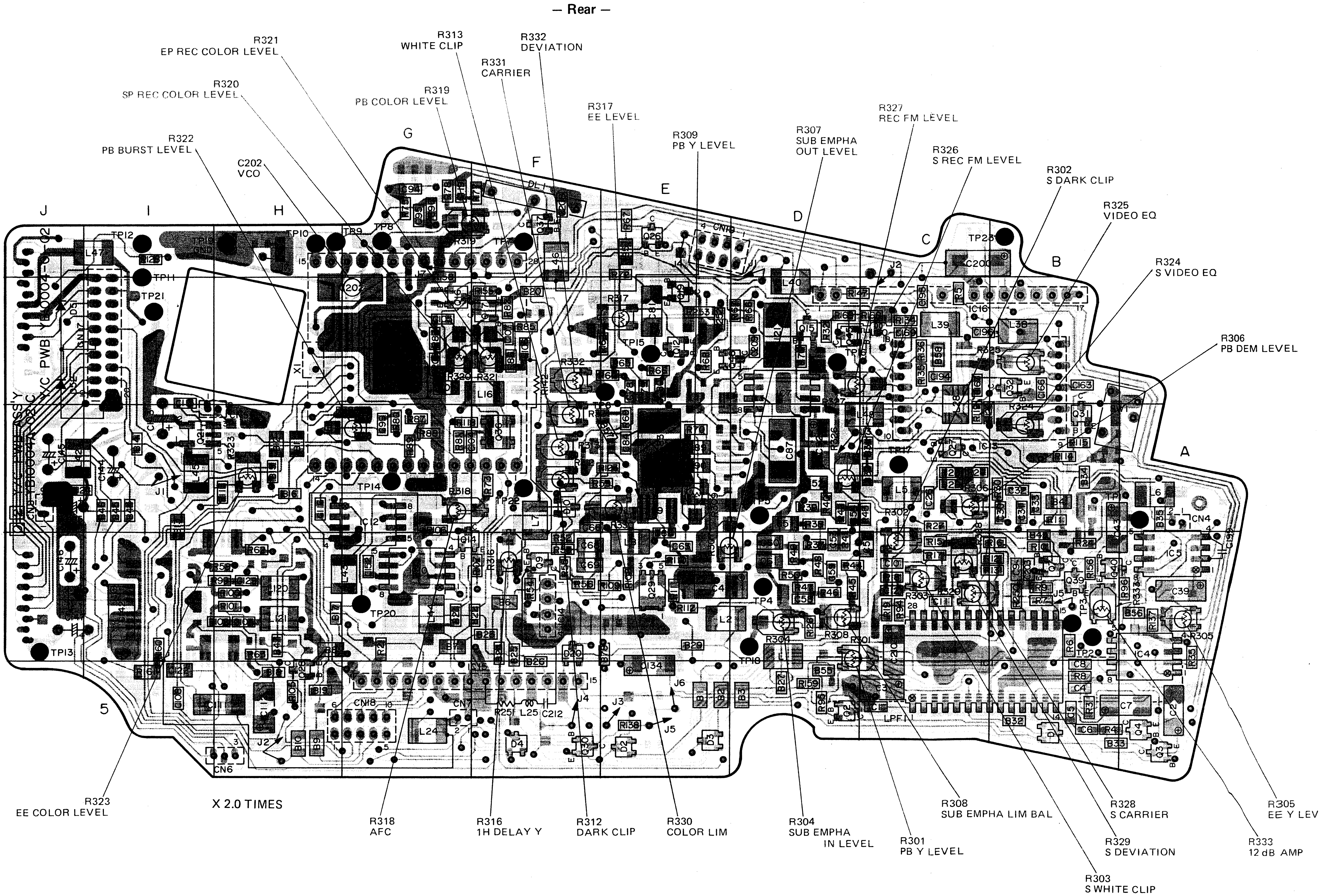
X 4.0 TIMES

— DI —



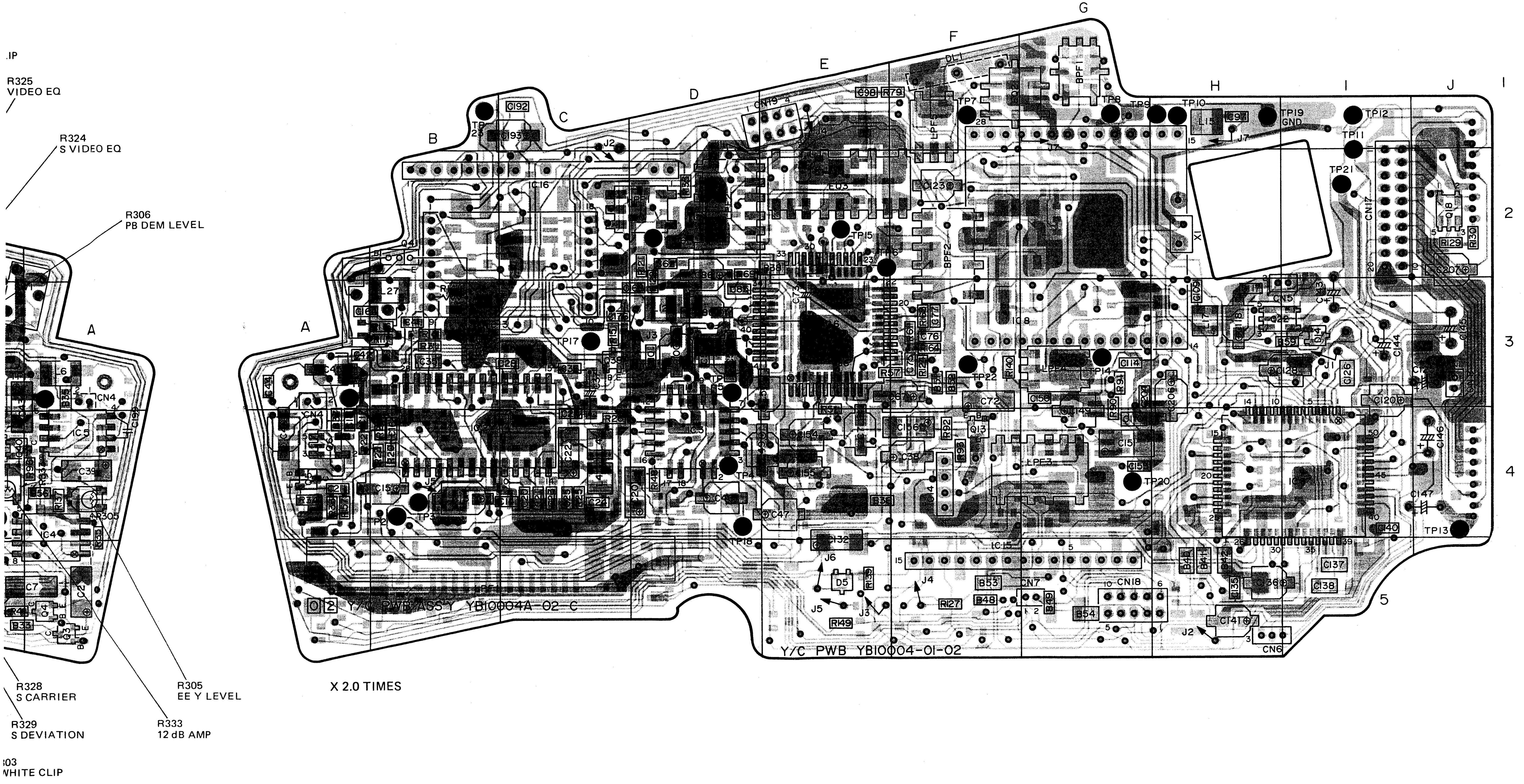
DI PWB ASS'Y YB20040A1

X 2.0 TIMES


— Rear —
R321
EP REC COLOR LEVEL
R313
WHITE CLIP
R332
DEVIATION
R331
CARRIER
R320
SP REC COLOR LEVEL
R319
PB COLOR LEVEL
R317
EE LEVEL
R327
REC FM LEVEL
R309
PB Y LEVEL
R307
SUB EMPHA
OUT LEVEL
R322
PB BURST LEVEL
R326
S REC FM LEVEL
C202
VCO
R302
S DARK CLIP
R325
VIDEO EQ
R324
S VIDEO EQ
R306
PB DEM LEVEL
G
F
E
D
C
B
A
I
J
I
H
2
3
4
5
TP12
TP11
TP21
TP10
TP9
TP8
TP23
TP13
TP14
TP20
TP22
TP15
TP4
TP18
TP2
CN6
CN7
CN18
CN4
CN10
L47
L39
L38
L40
L16
L24
L25
DL1
IC16
IC5
IC4
LPF1
X1
J1
J2
J3
J4
J5
J6
D2
D3
D4
D20
Q30
C212
R323
EE COLOR LEVEL
R318
AFC
R316
1H DELAY Y
R312
DARK CLIP
R330
COLOR LIM
R304
SUB EMPHA
IN LEVEL
R301
PB Y LEVEL
R308
SUB EMPHA LIM BAL
R328
S CARRIER
R329
S DEVIATION
R303
S WHITE CLIP
R305
EE Y LEV
R333
12 dB AMP

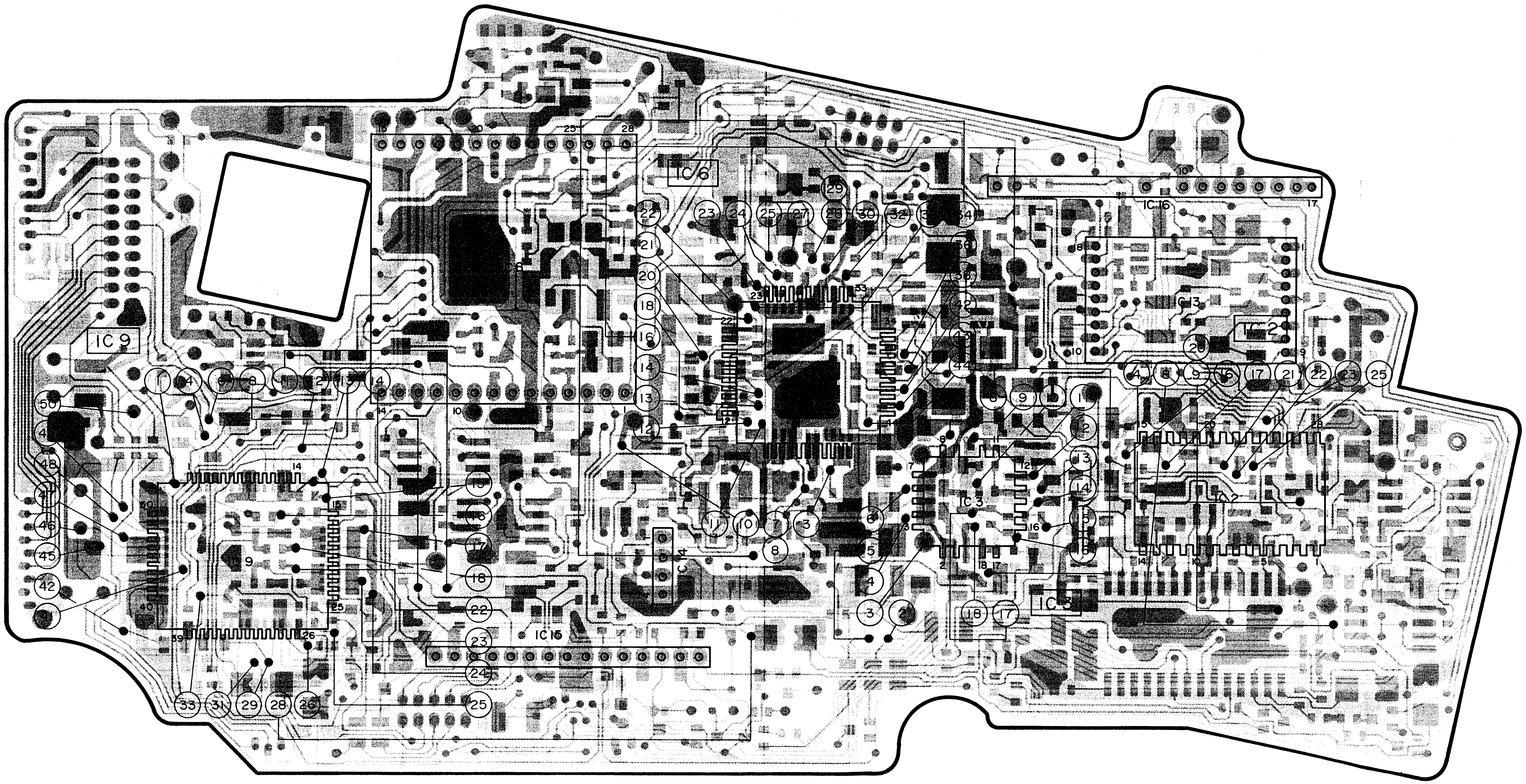
X 2.0 TIMES

— Front —


.IP
R325
VIDEO EQ
R324
S VIDEO EQ
R306
PB DEM LEVEL
R328
S CARRIER
R329
S DEVIATION
R305
EE Y LEVEL
R333
12 dB AMP
303
WHITE CLIP
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP17
TP18
TP19
GND
TP20
TP21
TP22
TP23
TP3
IC5
IC4
IC8
IC15
IC16
CN4
CN5
CN6
CN7
CN17
CN18
CN19
DL1
BPF1
BPF2
LPF1
LPF3
X1
J1
J2
J3
J4
J5
J6
J7
D5
Q13
Q18
C2
C7
C39
C47
C72
C114
C120
C137
C138
C140
C141
C144
C145
C146
C147
C192
C207
R127
R129
R130
R149
Y/C PWB ASSY YB10004A-02 C
Y/C PWB YB10004-01-02

X 2.0 TIMES

4.26 Y/C BOARD THROUGH HOLE LOCATION

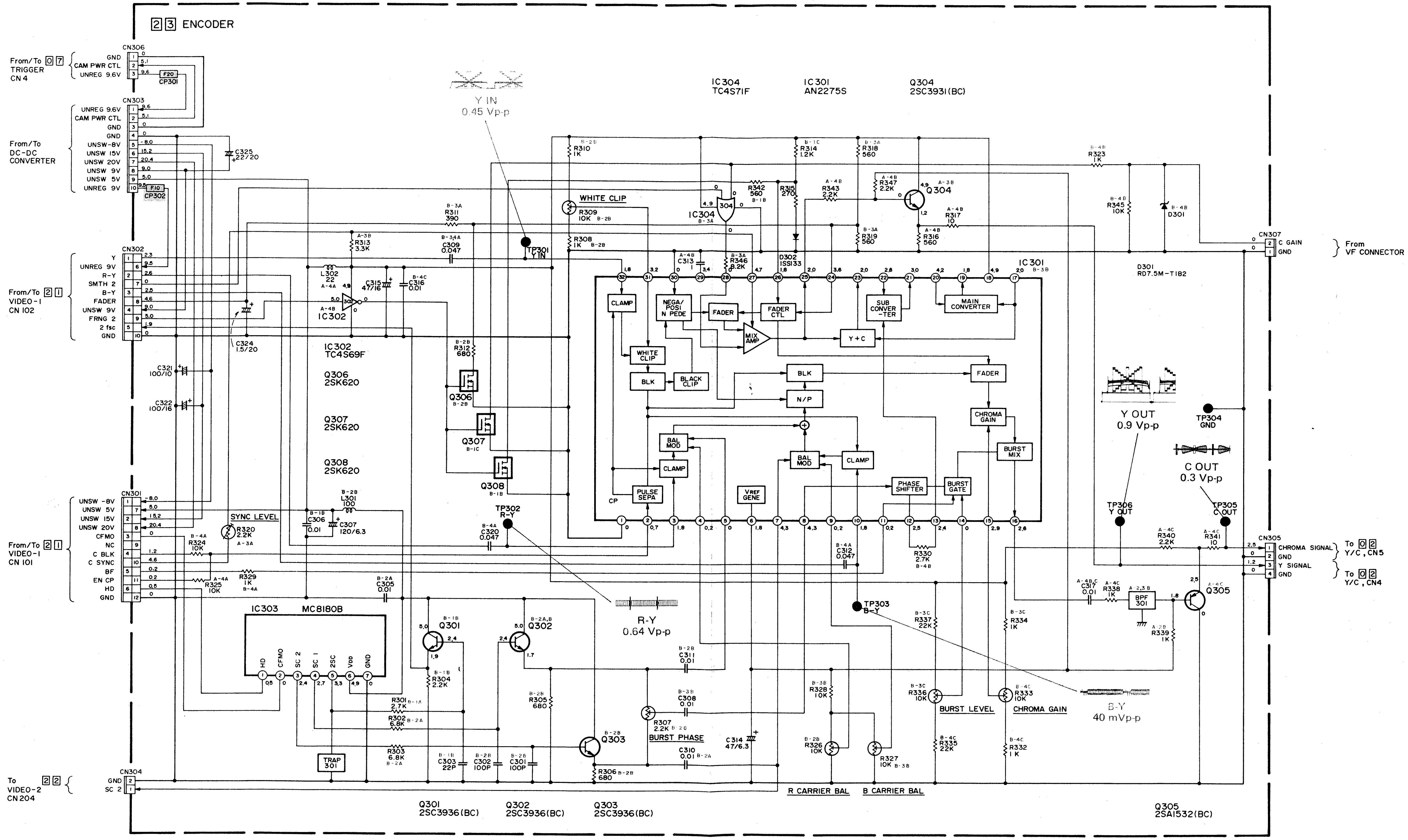

IC 9
IC6
IC8
IC16
IC13
IC2
IC3
IC5
IC15
IC4
IC12

X 2.0 TIMES

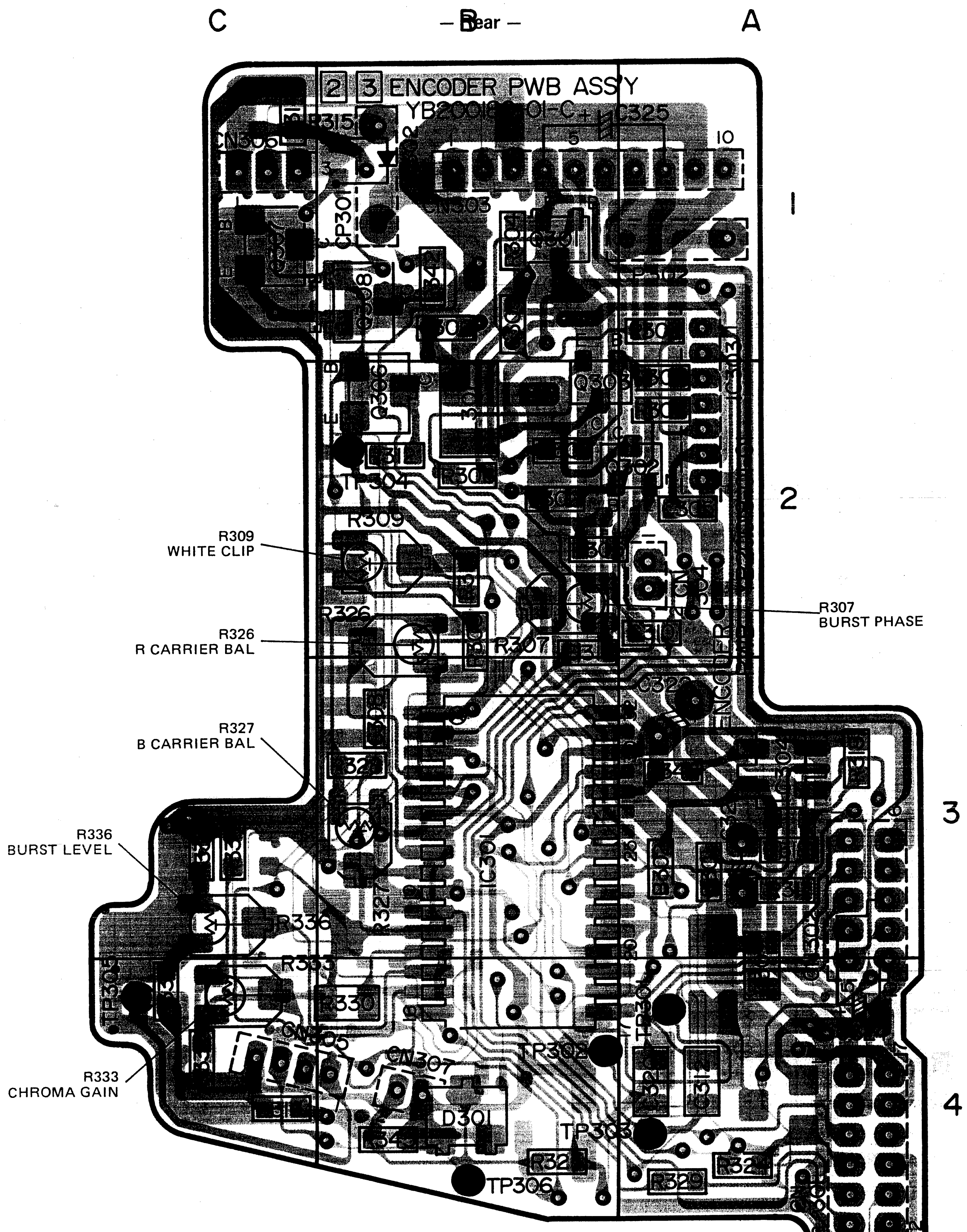
4.27 ENCODE

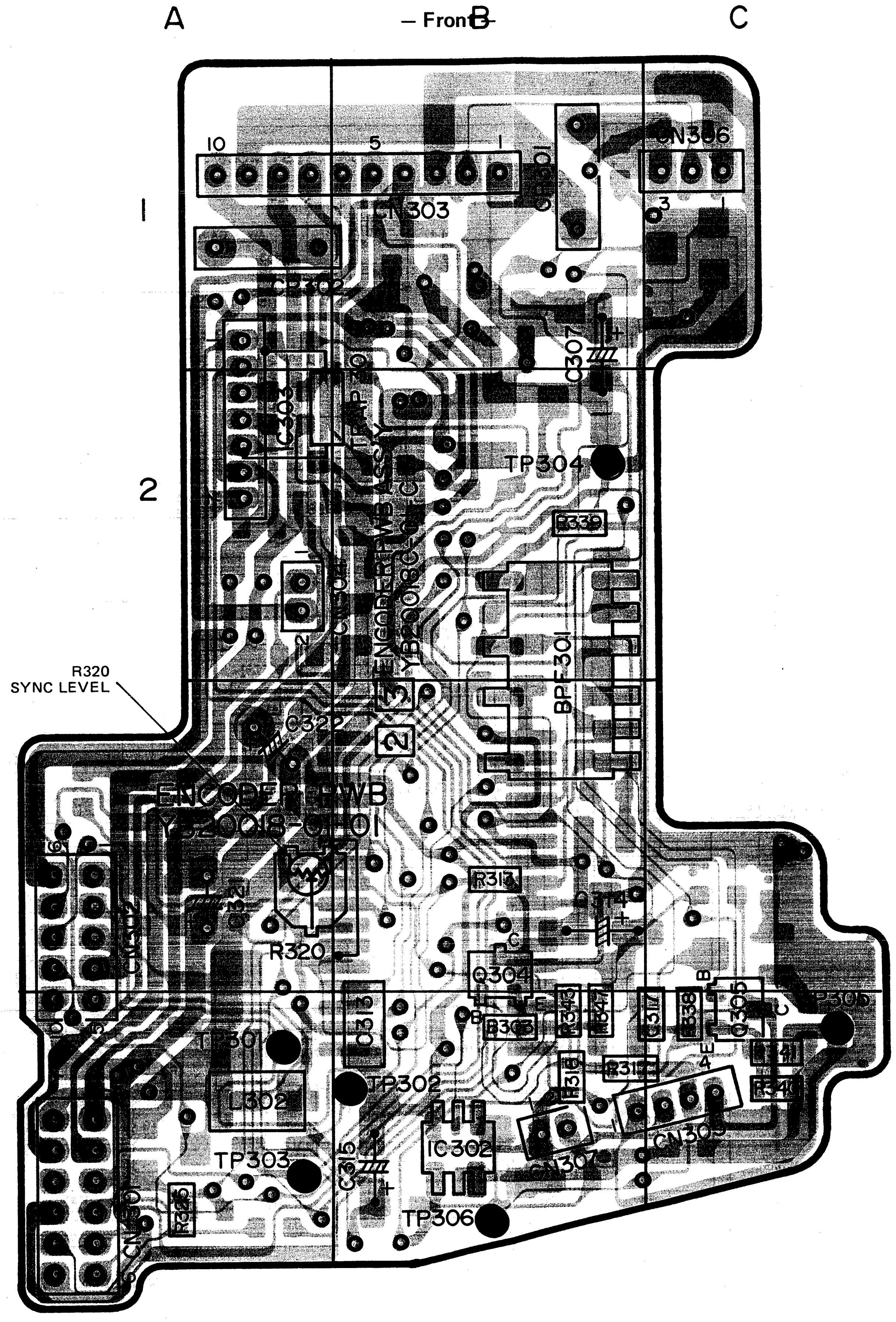
From/To 0 7
TRIGGER
CN 4
GN
CAM PWR CT
UNREG 9.6
From/To
DC-DC
CONVERTER
UNREG 9.6
CAM PWR CT
GN
GNI
UNSW-8
UNSW 15
UNSW 20
UNSW 9
UNSW 5
UNREG 9
From/To 2 1
VIDEO-1
CN 102
Y
UNREG 9V
R-Y
SMTH 2
B-Y
FADER
UNSW 9V
FRNG 2
2 fsc
GND
From/To 2 1
VIDEO-1
CN 101
UNSW -8V
UNSW 5V
UNSW 15V
UNSW 20V
CFMO
NC
C BLK
C SYNC
BF
EN CP
HD
GND
To 2 2
VIDEO-2
CN 204
GN
SC

4.27 ENCODER SCHEMATIC DIAGRAM


2 3 ENCODER
From/To 0 7 TRIGGER CN4
CN306
GND
CAM PWR CTL
UNREG 9.6V
F20
CP301
CN303
From/To DC-DC CONVERTER
UNREG 9.6V
CAM PWR CTL
GND
GND
UNSW -8V
UNSW 15V
UNSW 20V
UNSW 9V
UNSW 5V
UNREG 9V
F10
CP302
C325 22/20
From/To 2 1 VIDEO-1 CN 102
CN302
Y
UNREG 9V
R-Y
SMTH 2
B-Y
FADER
UNSW 9V
FRNG 2
2 fsc
GND
C324 1.5/20
C321 100/10
C322 100/16
From/To 2 1 VIDEO-1 CN 101
CN301
UNSW -8V
UNSW 5V
UNSW 15V
UNSW 20V
CFMO
NC
C BLK
C SYNC
BF
EN CP
HD
GND
SYNC LEVEL
R320 2.2K
R324 10K
R325 10K
R329 1K
To 2 2 VIDEO-2 CN 204
CN304
GND
SC 2
Y IN
0.45 Vp-p
TP301 Y IN
R311 390
R313 3.3K
C309 0.047
L302 22
C315 47/16
C316 0.01
IC302
IC302 TC4S69F
Q306 2SK620
Q307 2SK620
Q308 2SK620
R312 680
Q306
Q307
Q308
L301 100
C306 0.01
C307 120/6.3
TP302 R-Y
C320 0.047
C305 0.01
IC303 MC8180B
HD
CFMO
SC 2
SC 1
2SC
VDD
GND
TRAP 301
R301 2.7K
R302 6.8K
R303 6.8K
R304 2.2K
C303 22P
C302 100P
C301 100P
Q301
Q302
Q303
R305 680
R306 680
R-Y
0.64 Vp-p
C311 0.01
C308 0.01
R307 2.2K
BURST PHASE
C310 0.01
C314 47/6.3
WHITE CLIP
R309 10K
R308 1K
R310 1K
IC304 TC4S71F
IC301 AN2275S
Q304 2SC3931(BC)
IC304
R342 560
R315 270
R314 1.2K
R343 2.2K
R318 560
R347 2.2K
Q304
R317 10
R319 560
R316 560
R346 8.2K
D302 1SS133
C313 1
IC301
CLAMP
NEGA/POSI N PEDE
FADER
FADER CTL
SUB CONVER -TER
MAIN CONVERTER
MIX AMP
Y+C
WHITE CLIP
BLK
BLACK CLIP
BLK
N/P
FADER
CHROMA GAIN
BURST MIX
BAL MOD
CLAMP
BAL MOD
CLAMP
PULSE SEPA
VREF GENE
PHASE SHIFTER
BURST GATE
CP
C312 0.047
R330 2.7K
TP303 B-Y
R328 10K
R326 10K
R327 10K
R CARRIER BAL
B CARRIER BAL
R337 22K
R336 10K
BURST LEVEL
R335 22K
R334 1K
R333 10K
CHROMA GAIN
R332 1K
B-Y
40 mVp-p
R323 1K
R345 10K
D301
D301 RD7.5M-T1B2
CN307
C GAIN
GND
From VF CONNECTOR
Y OUT
0.9 Vp-p
TP304 GND
C OUT
0.3 Vp-p
TP306 Y OUT
TP305 C OUT
R340 2.2K
R341 10
CN305
CHROMA SIGNAL
GND
Y SIGNAL
GND
To 0 2 Y/C, CN5
To 0 2 Y/C, CN4
C317 0.01
R338 1K
BPF 301
Q305
R339 1K
Q301 2SC3936(BC)
Q302 2SC3936(BC)
Q303 2SC3936(BC)
Q305 2SA1532(BC)

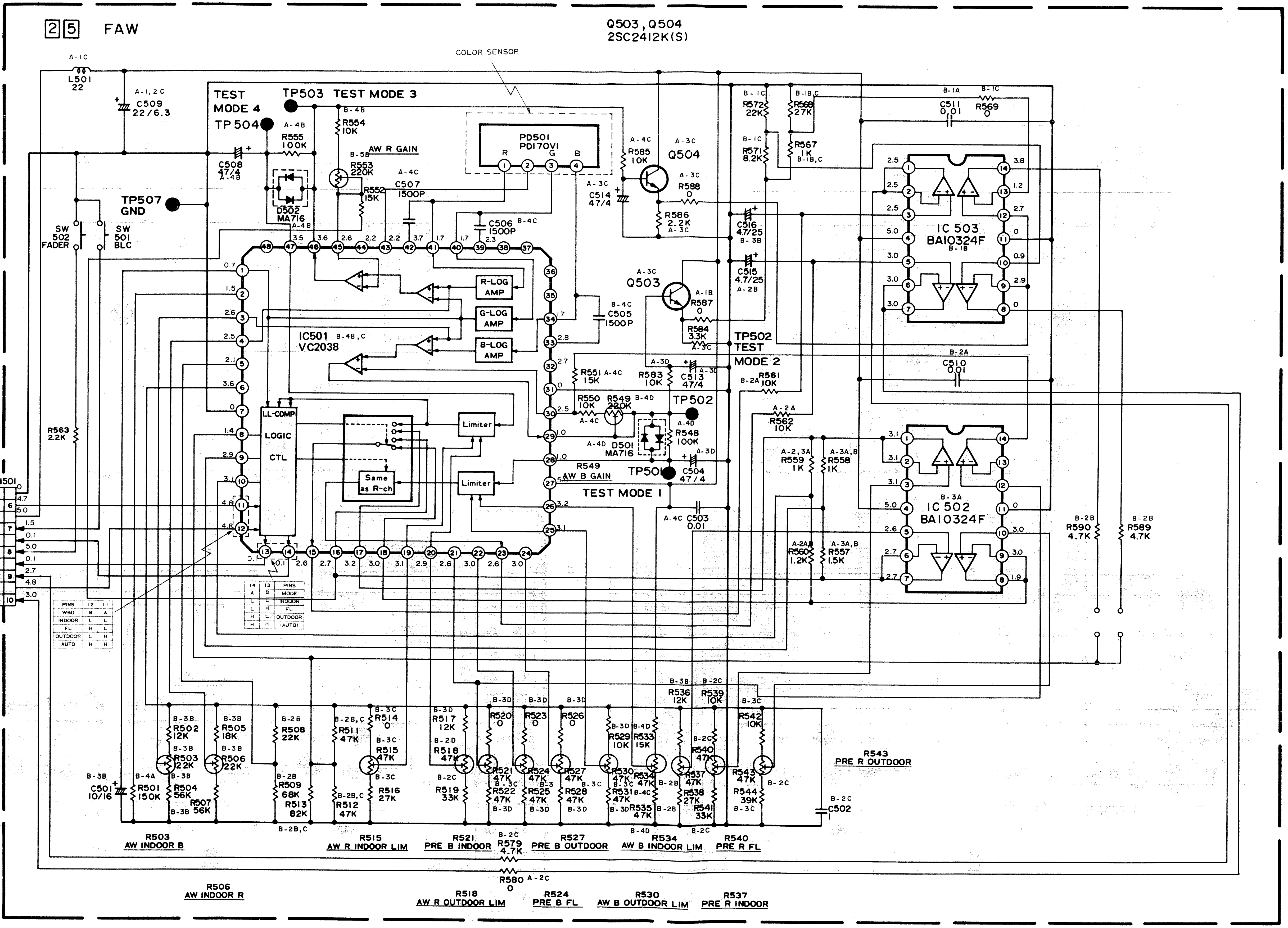
4.28 ENCODER CIRCUIT BOARD


C
B
— Rear —
A
1
2
3
4
ENCODER PWB ASS'Y
R309
WHITE CLIP
R326
R CARRIER BAL
R327
B CARRIER BAL
R336
BURST LEVEL
R333
CHROMA GAIN
R307
BURST PHASE
TP302
TP303
TP304
TP305
TP306
CN305
CN306
CN307
D301


A
B
— Front —
C
1
2
3
4
R320
SYNC LEVEL
ENCODER PWB
CN303
CN306
CN305
CN307
TP301
TP302
TP303
TP304
TP305
TP306
BPF301
IC302
L302
Q304
Q305

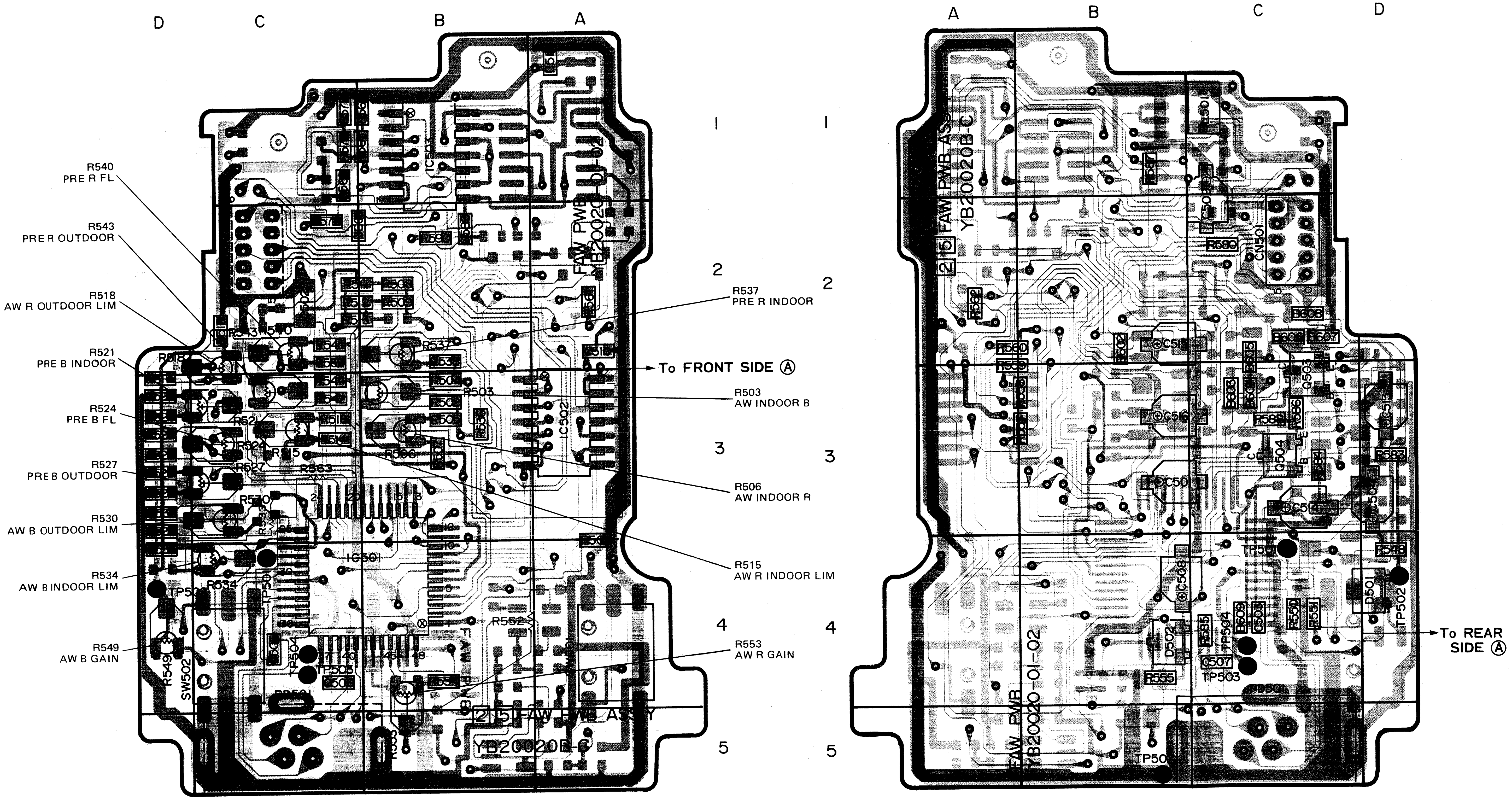
X 3.0 TINES

4.29 FAW SCHEMATIC DIAGRAM



25 FAW
Q503, Q504
2SC2412K(S)
COLOR SENSOR
L501 22
C509 22/6.3
TEST MODE 4
TP503 TEST MODE 3
TP504
R554 10K
R555 100K
C508 47/4
R553 220K
AW R GAIN
D502 MA716
R552 15K
C507 1500P
PD501 PD170VI
R G B
R585 10K
Q504
C514 47/4
R588 0
R586 2.2K
TP507 GND
SW 502 FADER
SW 501 BLC
C506 1500P
R-LOG AMP
G-LOG AMP
B-LOG AMP
IC501 VC2038
LL-COMP LOGIC CTL
Same as R-ch
Limiter
Limiter
Q503
R587 0
R584 3.3K
C505 1500P
TP502 TEST MODE 2
R551 15K
R583 10K
C513 47/4
R550 10K
R549 220K
TP502
D501 MA716
R548 100K
R549 AW B GAIN
C504 47/4
TP501
TEST MODE 1
C503 0.01
R572 22K
R568 27K
R571 8.2K
R567 1K
C516 47/25
C515 4.7/25
C511 0.01
R569 0
IC 503 BA10324F
C510 0.01
R561 10K
R562 10K
R559 1K
R558 1K
IC 502 BA10324F
R560 1.2K
R557 1.5K
R590 4.7K
R589 4.7K
From/To 24 IND CN404
CN501
GND
WBO A
UNSW 5V
BLC
MODE A
FADER
MODE B
R CTL
WBO B
B CTL
R563 2.2K
PINS 12 11
WBO B A
INDOOR L L
FL H L
OUTDOOR L H
AUTO H H
14 13 PINS
A B MODE
L L INDOOR
L H FL
H L OUTDOOR
H H (AUTO)
R502 12K
R505 18K
R503 22K
R506 22K
R508 22K
R511 47K
R514 0
R515 47K
R517 12K
R518 47K
R520 0
R523 0
R526 0
R529 10K
R533 15K
R536 12K
R539 10K
R542 10K
R540 47K
C501 10/16
R501 150K
R504 56K
R507 56K
R509 68K
R513 82K
R512 47K
R516 27K
R519 33K
R521 47K
R522 47K
R524 47K
R525 47K
R527 47K
R528 47K
R530 47K
R531 47K
R534 47K
R535 47K
R537 47K
R538 27K
R541 33K
R543 47K
R544 39K
C502
R543 PRE R OUTDOOR
R503 AW INDOOR B
R515 AW R INDOOR LIM
R521 PRE B INDOOR
R579 4.7K
R527 PRE B OUTDOOR
R534 AW B INDOOR LIM
R540 PRE R FL
R580 0
R506 AW INDOOR R
R518 AW R OUTDOOR LIM
R524 PRE B FL
R530 AW B OUTDOOR LIM
R537 PRE R INDOOR

4.30 FAW CIRCUIT BOARD



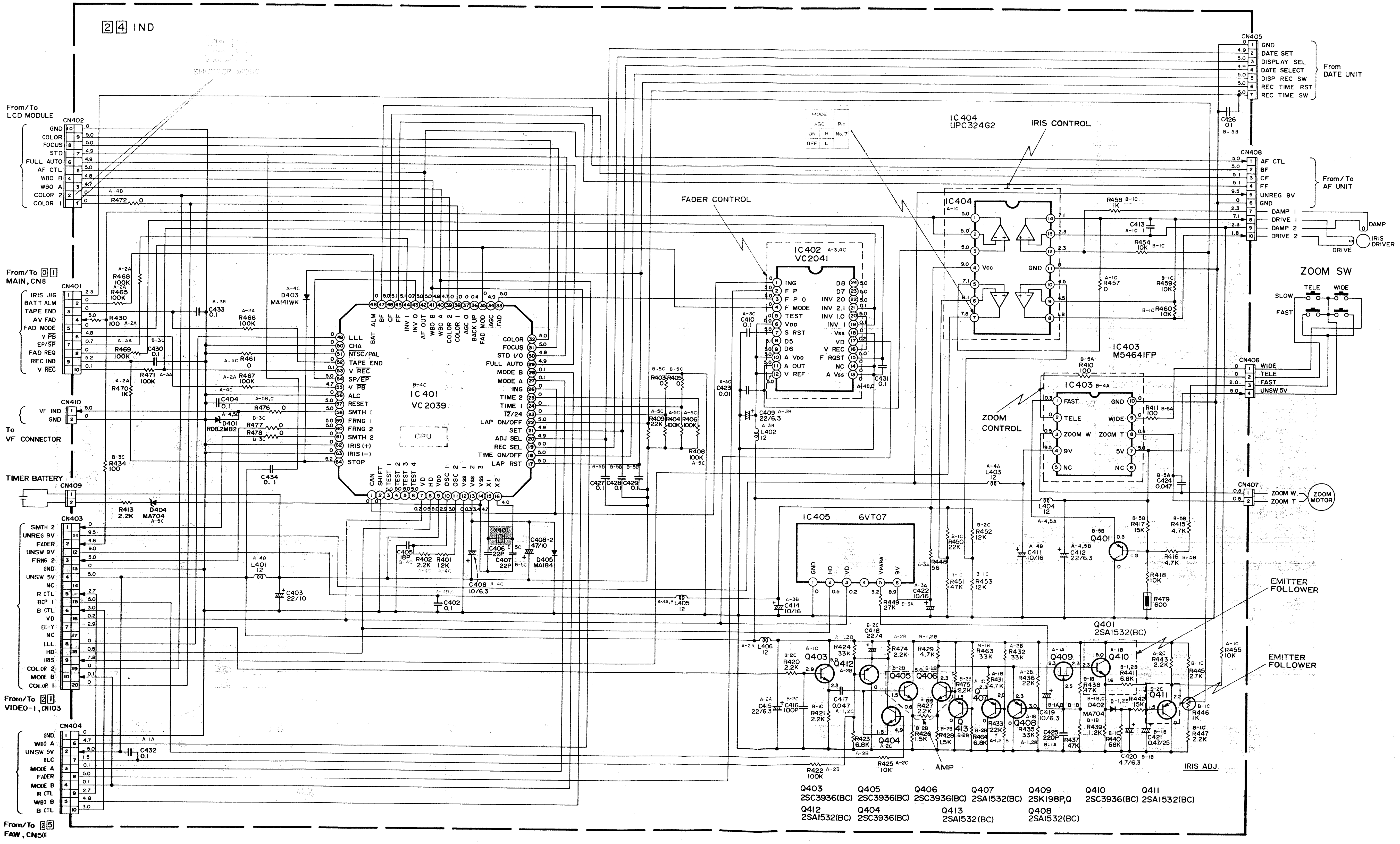
— Rear —

— Front —

D
C
B
A
1
2
3
4
5
R540
PRE R FL
R543
PRE R OUTDOOR
R518
AW R OUTDOOR LIM
R521
PRE B INDOOR
R524
PRE B FL
R527
PRE B OUTDOOR
R530
AW B OUTDOOR LIM
R534
AW B INDOOR LIM
R549
AW B GAIN
R537
PRE R INDOOR
To FRONT SIDE Ⓐ
R503
AW INDOOR B
R506
AW INDOOR R
R515
AW R INDOOR LIM
R553
AW R GAIN
IC501
IC502
TP501
TP504
TP505
SW502
2|5| FAW PWB ASSY
YB20020B-C
FAW PWB
YB20020-01-02
A
B
C
D
1
2
3
4
5
CN501
Q503
Q504
C508
D501
D502
TP501
TP502
TP503
TP504
To REAR SIDE Ⓐ

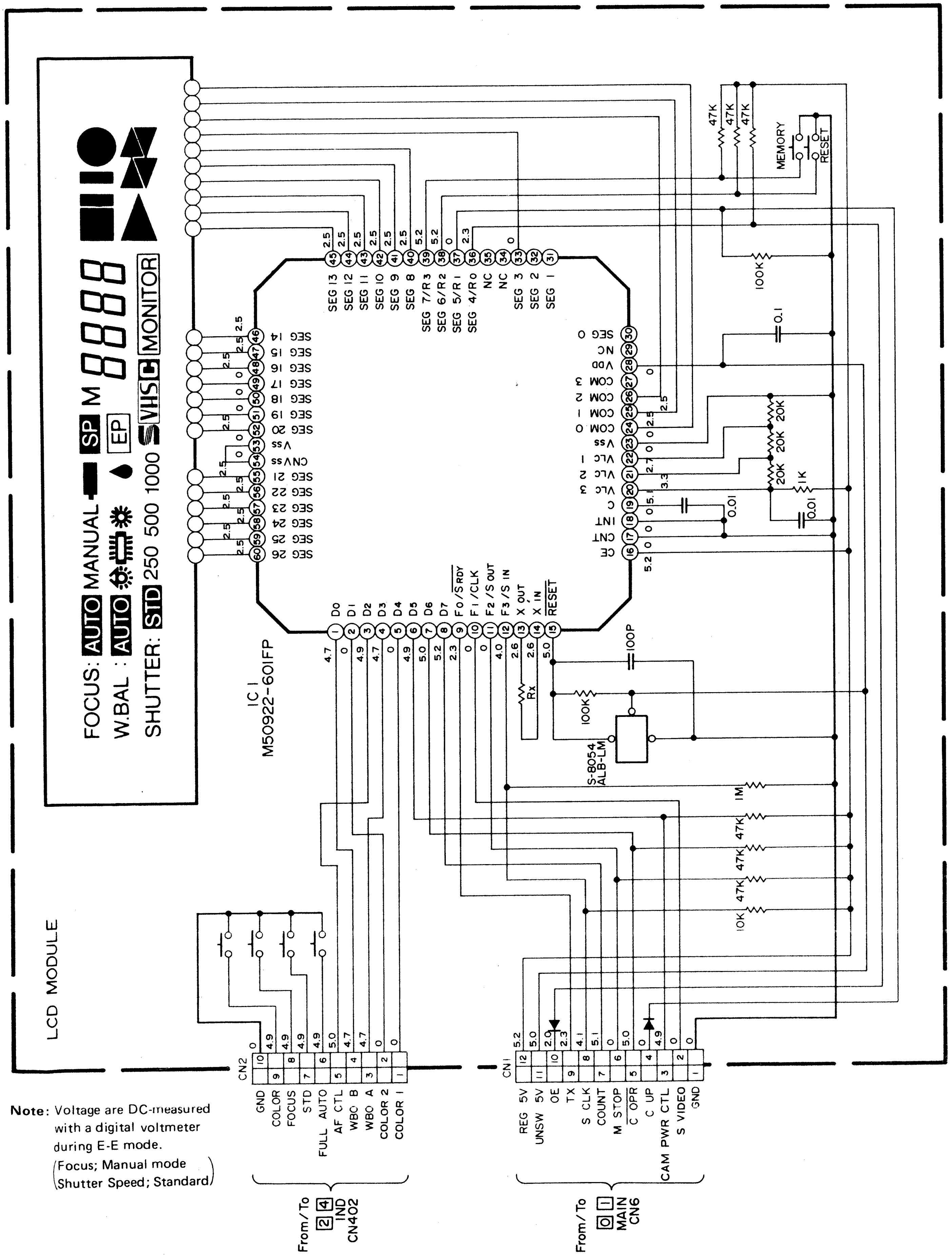
X 3.0 TINES

4.31 INDICATOR SCHEMATIC DIAGRAM


24 IND
From/To LCD MODULE
CN402
GND
COLOR
FOCUS
STD
FULL AUTO
AF CTL
WBO B
WBO A
COLOR 2
COLOR 1
From/To 01 MAIN, CN8
CN401
IRIS JIG
BATT ALM
TAPE END
AV FAD
FAD MODE
V PB
EP/SP
FAD REQ
REC IND
V REC
CN410
VF IND
GND
To VF CONNECTOR
TIMER BATTERY
CN409
CN403
SMTH 2
UNREG 9V
FADER
UNSW 9V
FRNG 2
GND
UNSW 5V
NC
R CTL
BCP 1
B CTL
VD
EE-Y
NC
LLL
HD
IRIS
COLOR 2
MODE B
COLOR 1
From/To 21 VIDEO-1, CN103
CN404
GND
WBO A
UNSW 5V
BLC
MODE A
FADER
MODE B
R CTL
WBO B
B CTL
From/To 25 FAW, CN501
IC401
VC2039
CPU
D403 MA141WK
D401 RD8.2MB2
D404 MA704
D405 MA184
X401
FADER CONTROL
IC402
VC2041
IC404
UPC324G2
IRIS CONTROL
IC403
M54641FP
ZOOM CONTROL
IC405 6VT07
CN405
GND
DATE SET
DISPLAY SEL
DATE SELECT
DISP REC SW
REC TIME RST
REC TIME SW
From DATE UNIT
CN408
AF CTL
BF
CF
FF
UNREG 9V
GND
DAMP 1
DRIVE 1
DAMP 2
DRIVE 2
From/To AF UNIT
DAMP
IRIS DRIVER
DRIVE
ZOOM SW
TELE
WIDE
SLOW
FAST
CN406
WIDE
TELE
FAST
UNSW 5V
CN407
ZOOM W
ZOOM T
ZOOM MOTOR
EMITTER FOLLOWER
EMITTER FOLLOWER
Q401 2SA1532(BC)
AMP
IRIS ADJ
Q403 2SC3936(BC)
Q405 2SC3936(BC)
Q406 2SC3936(BC)
Q407 2SA1532(BC)
Q409 2SK198P,Q
Q410 2SC3936(BC)
Q411 2SA1532(BC)
Q412 2SA1532(BC)
Q404 2SC3936(BC)
Q413 2SA1532(BC)
Q408 2SA1532(BC)

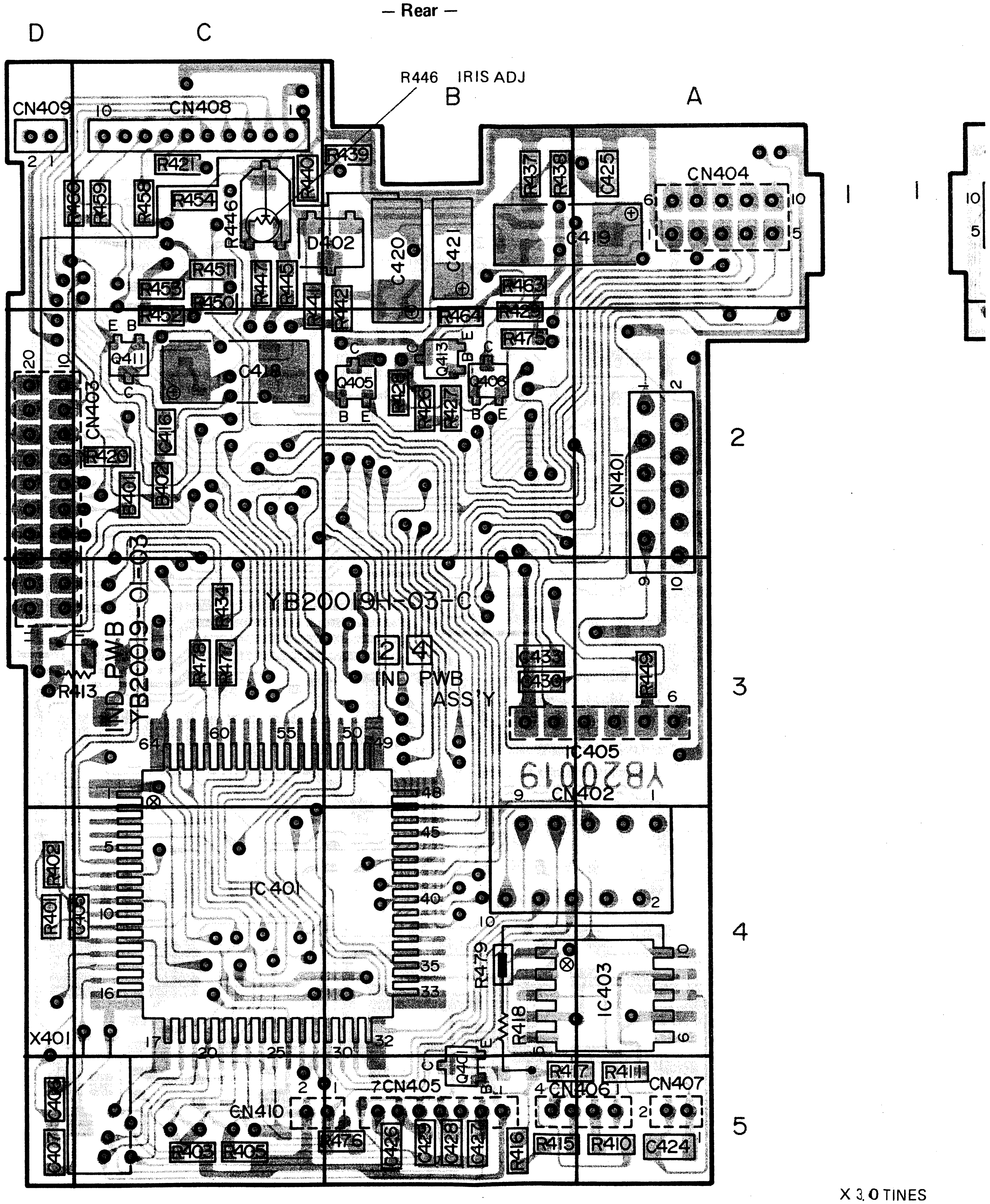
4.32 LCD MODULE SCHEMATIC DIAGRAM

Note:
This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


FOCUS: AUTO MANUAL
W.BAL : AUTO
SHUTTER: STD 250 500 1000
SP EP M 8888 VHS C MONITOR
IC 1
M50922-601FP
S-8054 ALB-LM
MEMORY
RESET
47K
100K
0.1
0.01
20K
1K
100P
Rx
1M
10K
LCD MODULE
CN2
GND
COLOR
FOCUS
STD
FULL AUTO
AF CTL
WBO B
WBO A
COLOR 2
COLOR 1
From/To 2 4 IND CN402
CN1
REG 5V
UNSW 5V
OE
TX
S CLK
COUNT
M STOP
C OPR
C UP
CAM PWR CTL
S VIDEO
GND
From/To 0 1 MAIN CN6

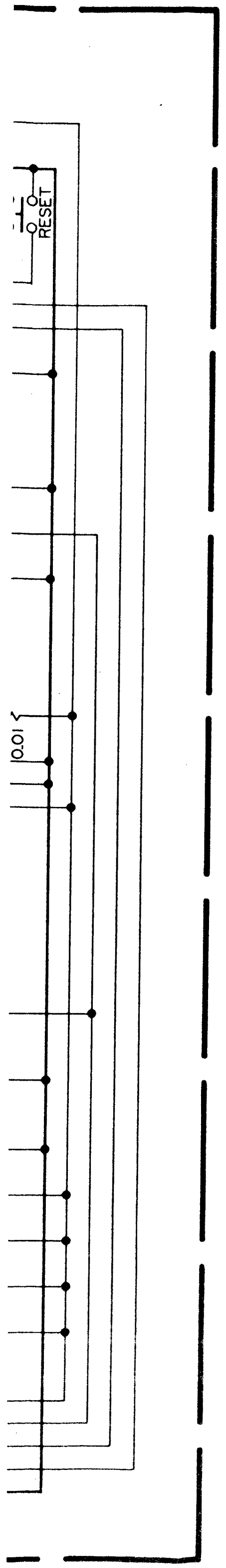
Note: Voltage are DC-measured with a digital voltmeter during E-E mode.
(Focus; Manual mode
Shutter Speed; Standard)

4.33 INDICATOR CIRCUIT BOARD


— Rear —
D
C
B
A
R446 IRIS ADJ
CN409
CN408
CN404
CN403
CN401
CN402
CN405
CN406
CN407
CN410
IC401
IC403
IC405
X401
D402
Q401
Q405
Q406
Q411
Q413
YB20019H-03-C
IND PWB YB20019-01-03
2 4 IND PWB ASS'Y
1
2
3
4
5

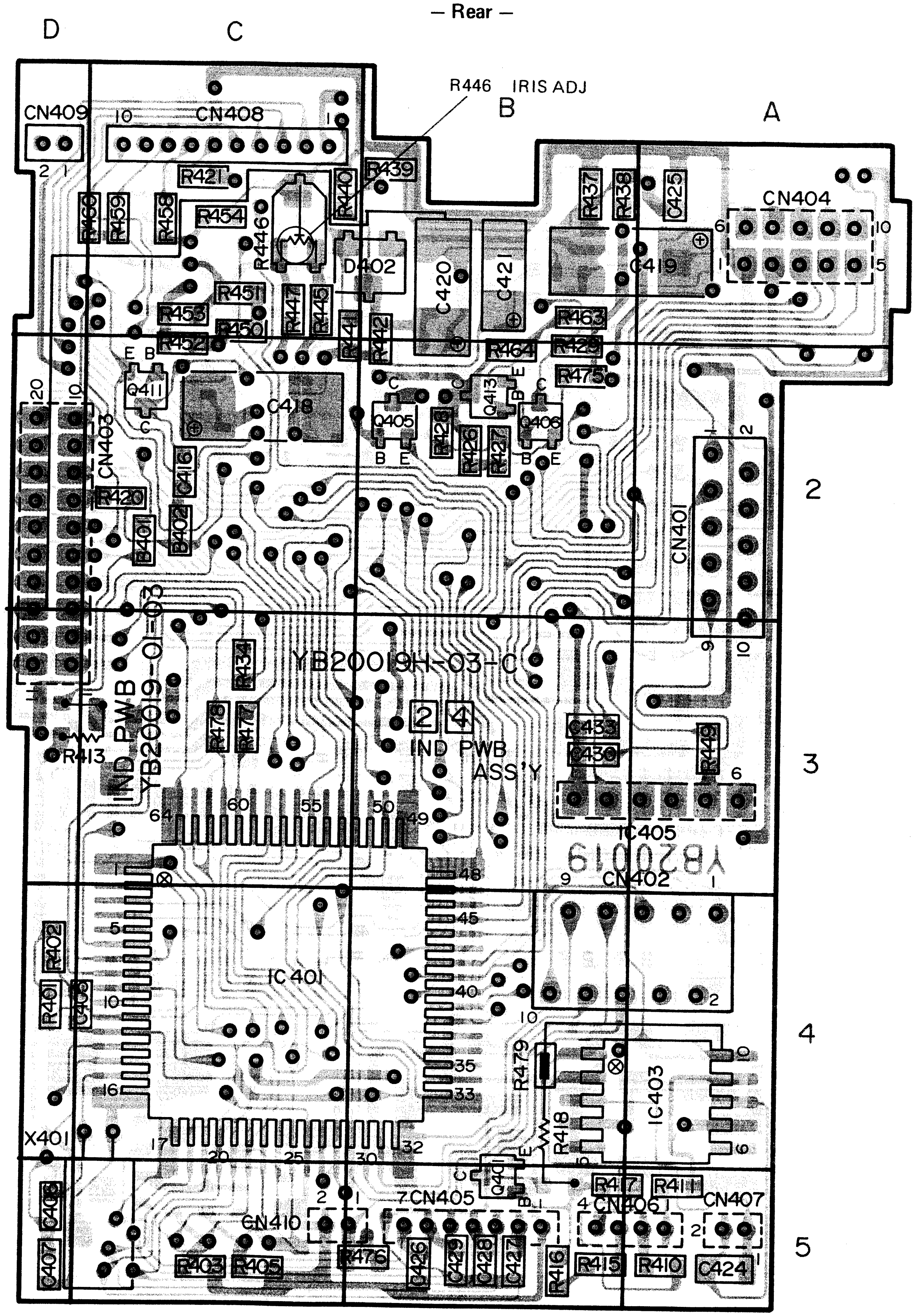
X 3.0 TIMES

ıly for reference.
ıarts.

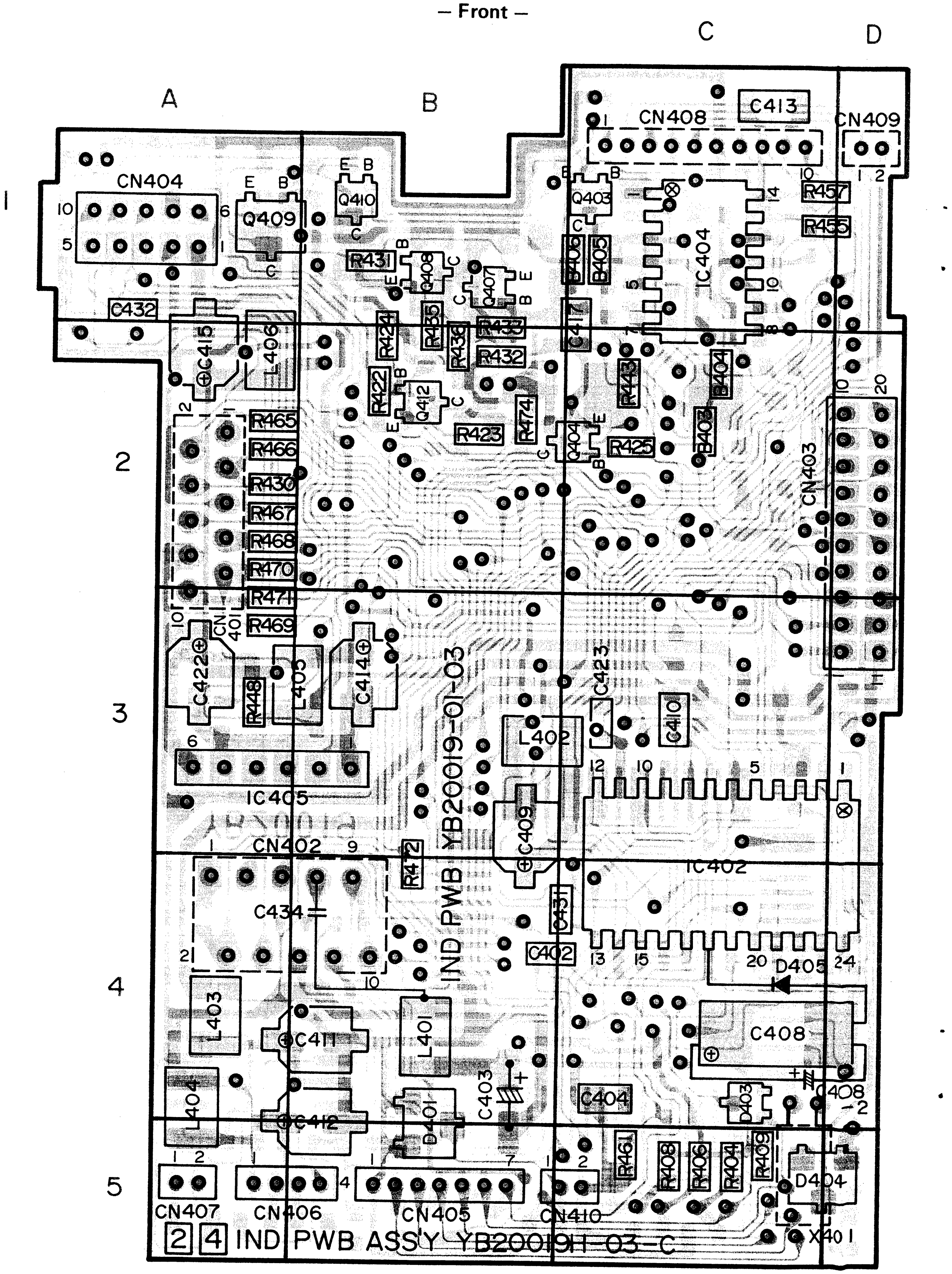


4.33 INDICATOR CIRCUIT BOARD

– Rear –

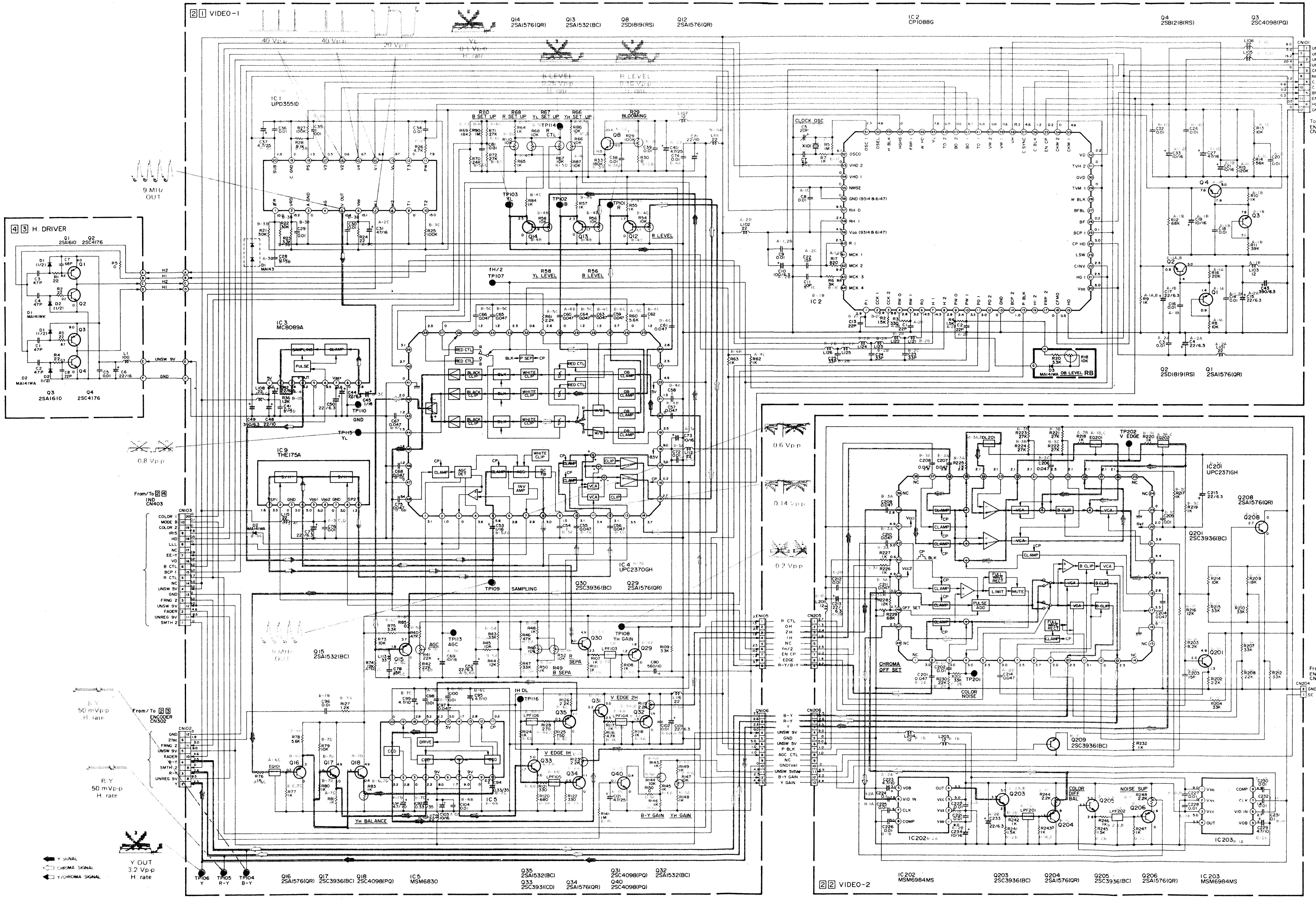

D
C
B
A
R446 IRIS ADJ
CN409
CN408
CN404
CN403
CN401
CN402
CN405
CN406
CN407
CN410
IC401
IC403
IC405
D402
C418
C419
C420
C421
Q401
Q405
Q406
Q411
Q413
X401
R413
IND PWB YB20019-01-03
YB20019H-03-C
2 4 IND PWB ASS'Y
1
2
3
4
5

– Front –

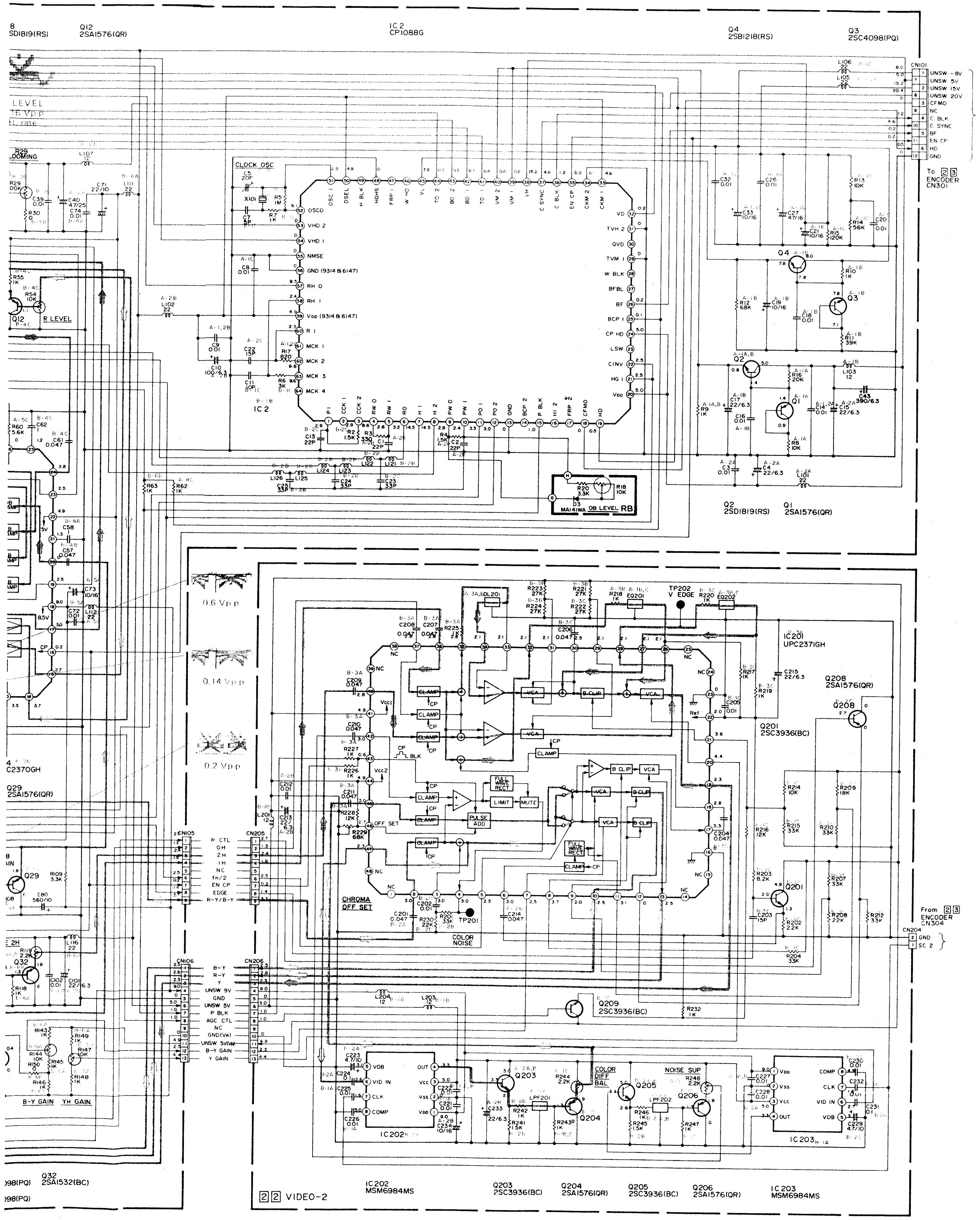

A
B
C
D
CN404
CN408
CN409
CN403
CN401
CN402
CN405
CN406
CN407
CN410
IC402
IC404
IC405
Q403
Q404
Q407
Q408
Q409
Q410
Q412
L401
L402
L403
L404
L405
L406
C408
C411
C412
C413
C414
C415
C422
C434
D401
D403
D404
D405
X401
IND PWB YB20019-01-03
2 4 IND PWB ASS'Y YB20019H-03-C
1
2
3
4
5

X 3.0 TINES

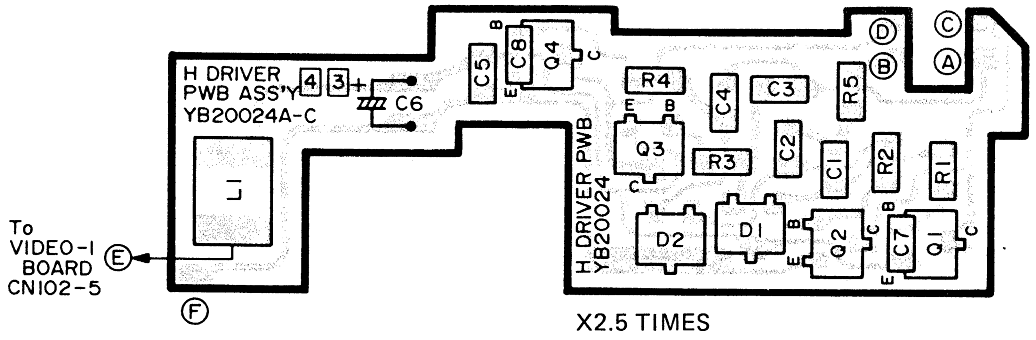
4.34 VIDEO SCHEMATIC DIAGRAM



2 1 VIDEO-1
2 2 VIDEO-2
4 3 H. DRIVER
IC1 UPD3551D
IC2 CP1088G
IC3 MC8089A
IC4 UPC2370GH
IC5 MSM6830
IC9 THE175A
IC201 UPC2371GH
IC202 MSM6984MS
IC203 MSM6984MS
Q1 2SA1610
Q2 2SC4176
Q3 2SA1610
Q4 2SC4176
Q14 2SA1576(QR)
Q13 2SA1532(BC)
Q8 2SD1819(RS)
Q12 2SA1576(QR)
Q4 2SB1218(RS)
Q3 2SC4098(PQ)
Q2 2SD1819(RS)
Q1 2SA1576(QR)
Q15 2SA1532(BC)
Q30 2SC3936(BC)
Q29 2SA1576(QR)
Q16 2SA1576(QR)
Q17 2SC3936(BC)
Q18 2SC4098(PQ)
Q35 2SA1532(BC)
Q33 2SC3931(CD)
Q34 2SA1576(QR)
Q31 2SC4098(PQ)
Q40 2SC4098(PQ)
Q32 2SA1532(BC)
Q201 2SC3936(BC)
Q208 2SA1576(QR)
Q209 2SC3936(BC)
Q203 2SC3936(BC)
Q204 2SA1576(QR)
Q205 2SC3936(BC)
Q206 2SA1576(QR)
CLOCK OSC
9 MHz OUT
40 Vp-p
20 Vp-p
YL 0.4 Vp-p H rate
B LEVEL 0.36 Vp-p H rate
R LEVEL 0.36 Vp-p H rate
R110 B SET UP
R68 R SET UP
R67 YL SET UP
R66 YH SET UP
R29 BLOOMING
TP103 YL
TP102 B
TP101 R
R LEVEL
fH/2 TP107
R58 YL LEVEL
R56 B LEVEL
TP114 R CTL
TP110
TP115 YL
TP109 SAMPLING
TP113 AGC
TP108 YH GAIN
TP116
TP202 V EDGE
TP201
R49 B SEPA
R52 R SEPA
V EDGE 2H
V EDGE 1H
YH BALANCE
B-Y GAIN
YH GAIN
CHROMA OFF SET
COLOR NOISE
COLOR DIFF BAL
NOISE SUP
D3 MA141WA DB LEVEL RB
0.8 Vp-p
0.6 Vp-p
0.14 Vp-p
0.2 Vp-p
B-Y 50 mVp-p H rate
R-Y 50 mVp-p H rate
Y OUT 3.2 Vp-p H rate
TP106 Y
TP105 R-Y
TP104 B-Y
Y SIGNAL
CHROMA SIGNAL
Y/CHROMA SIGNAL
From/To 2 4 IND CN403
From/To 2 3 ENCODER CN302
To 2 3 ENCODER CN301
From 2 3 ENCODER CN304
CN101
CN102
CN103
CN105
CN106
CN204
CN205
CN206
UNSW 9V
GND

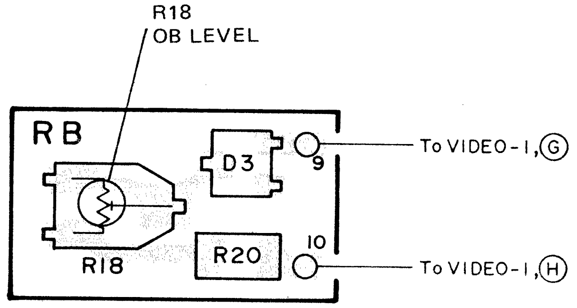

IC2
CP1088G
Q12
2SA1576(QR)
Q4
2SB1218(RS)
Q3
2SC4098(PQ)
CN101
UNSW 8V
UNSW 5V
UNSW 15V
UNSW 20V
CFMO
NC
C BLK
C SYNC
BF
EN CP
HD
GND
To 2 3 ENCODER CN301
CLOCK OSC
R LEVEL
OB LEVEL RB
Q2
2SD1819(RS)
Q1
2SA1576(QR)
IC201
UPC2371GH
Q208
2SA1576(QR)
Q201
2SC3936(BC)
TP202 V EDGE
TP201
COLOR NOISE
CHROMA OFF SET
0.6 Vp-p
0.14 Vp-p
0.2 Vp-p
CN105
CN205
CN106
CN206
From 2 3 ENCODER CN304
CN204
Q209
2SC3936(BC)
COLOR DIFF BAL
NOISE SUP
LPF201
LPF202
IC202
IC203
Q203
Q204
Q205
Q206
IC202
MSM6984MS
Q203
2SC3936(BC)
Q204
2SA1576(QR)
Q205
2SC3936(BC)
Q206
2SA1576(QR)
IC203
MSM6984MS
Q32
2SA1532(BC)
Q29
2SA1576(QR)
B-Y GAIN
YH GAIN
2 2 VIDEO-2

— H. DRIVER —


H DRIVER
PWB ASS'Y
YB20024A-C
H DRIVER PWB
YB20024
To
VIDEO-1
BOARD
CN102-5
E
F
A
B
C
D
4
3
C6
L1
C5
C8
Q4
R4
C4
C3
R5
Q3
R3
C2
C1
R2
R1
D2
D1
Q2
C7
Q1

X2.5 TIMES

— RB —

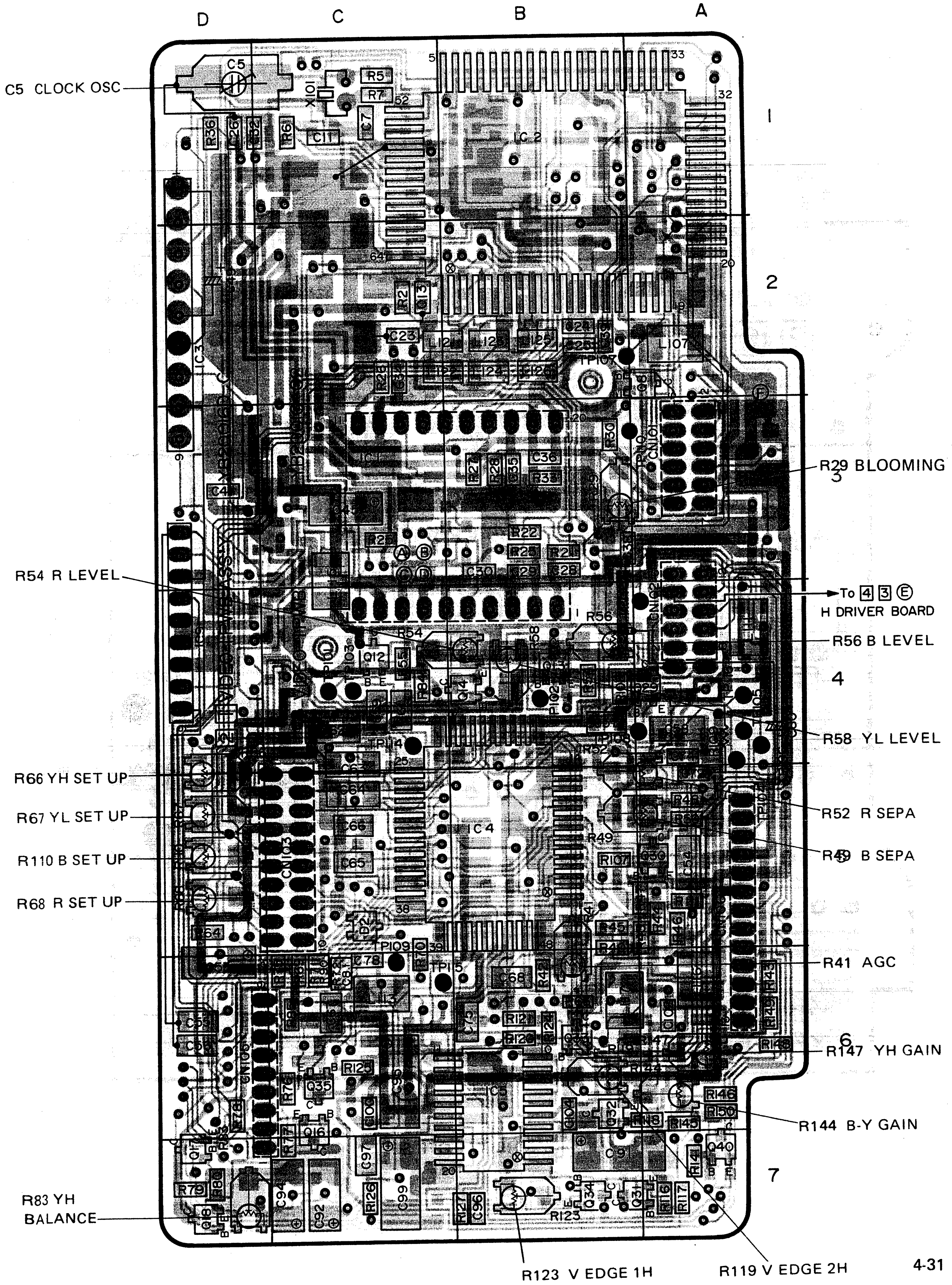

R18
OB LEVEL
RB
D3
9
10
R18
R20
To VIDEO-1, G
To VIDEO-1, H

RB PWB YB20053
RB PWB ASS'Y YB20053A-C

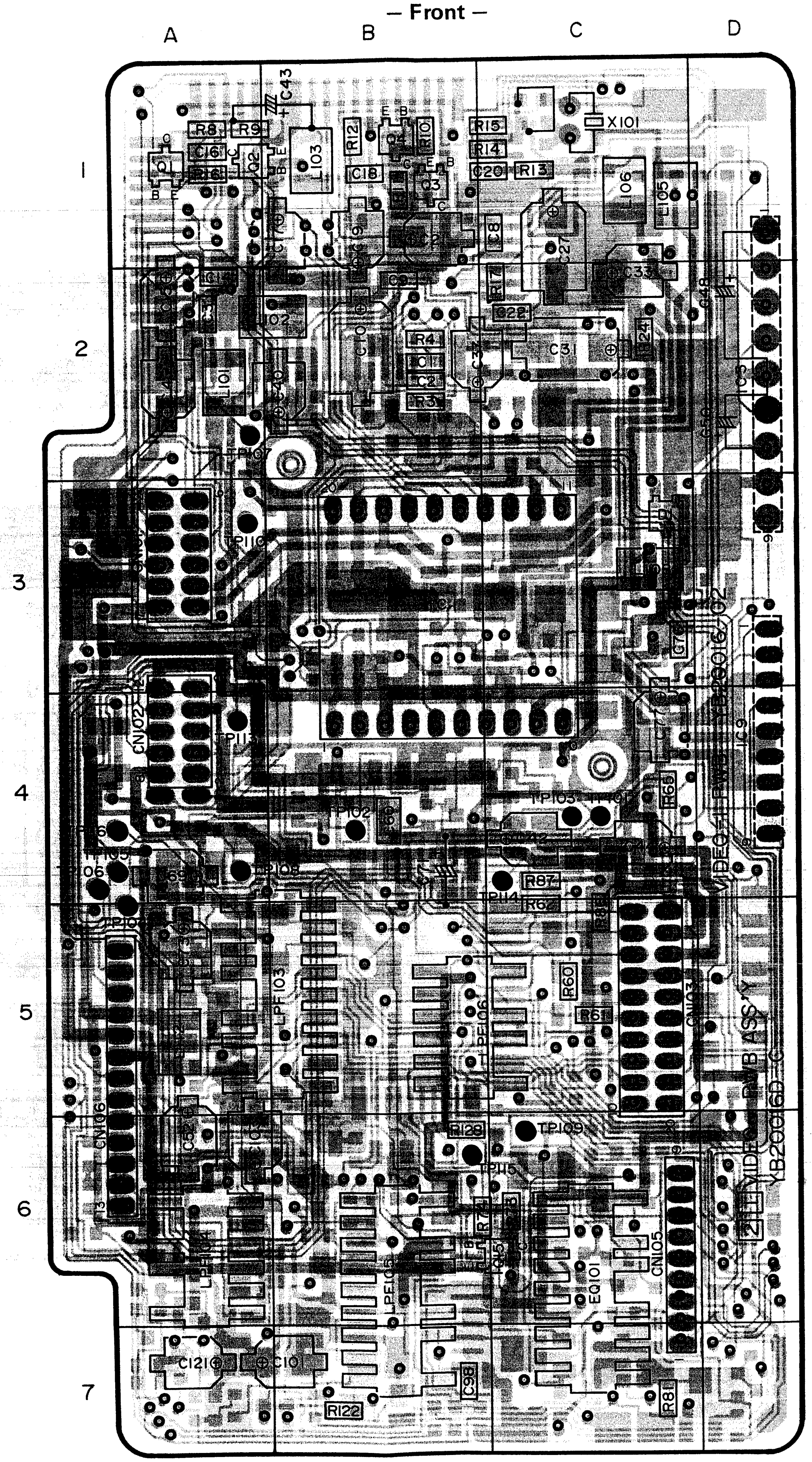
X2.5 TIMES

4.35 VIDEO-1 CIRCUIT BOARD

— Rear —

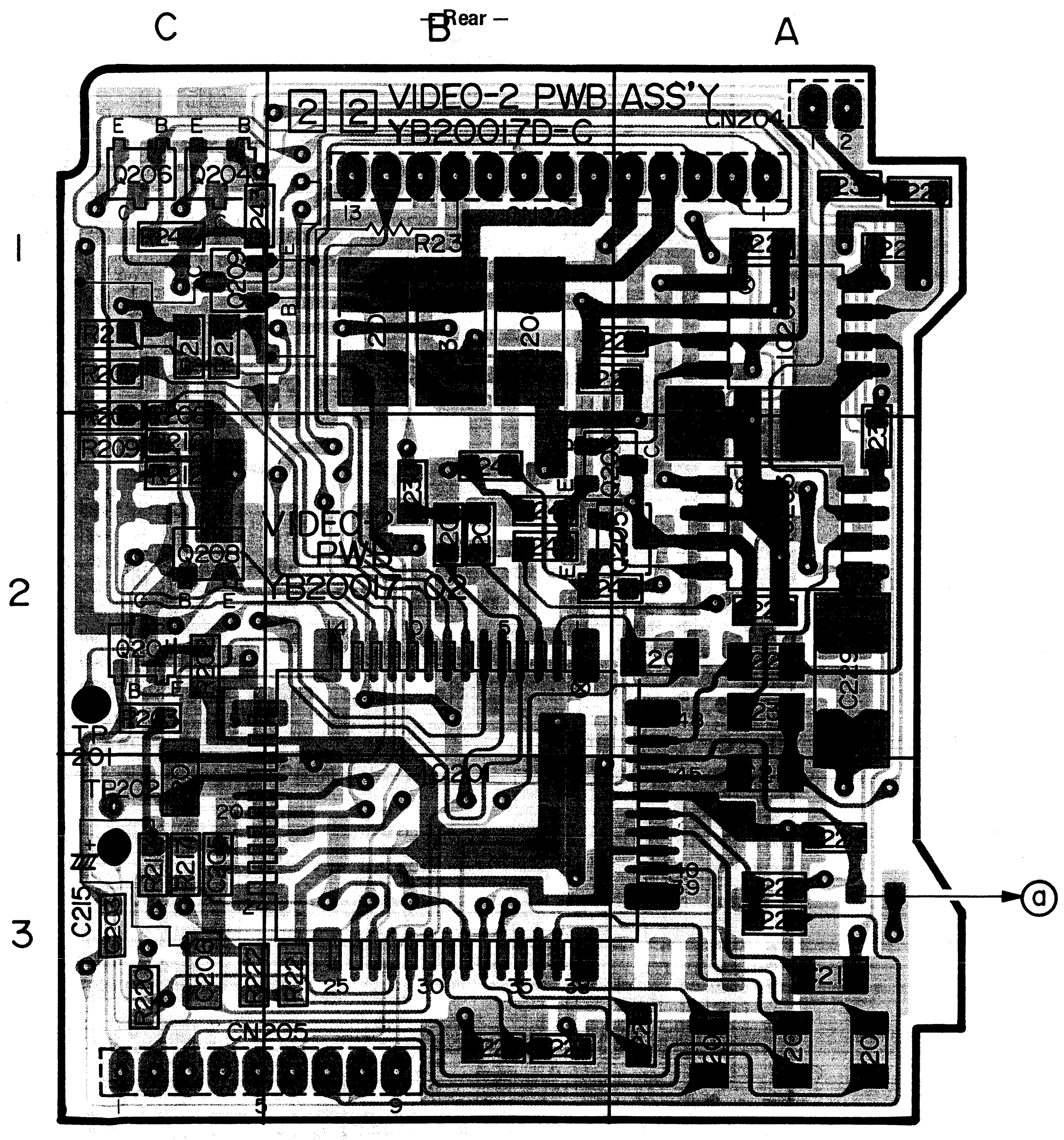

D
C
B
A
1
2
3
4
5
6
7
C5 CLOCK OSC
R29 BLOOMING
R54 R LEVEL
To 4 3 E
H DRIVER BOARD
R56 B LEVEL
R58 YL LEVEL
R66 YH SET UP
R67 YL SET UP
R110 B SET UP
R68 R SET UP
R52 R SEPA
R49 B SEPA
R41 AGC
R147 YH GAIN
R144 B-Y GAIN
R83 YH
BALANCE
R123 V EDGE 1H
R119 V EDGE 2H

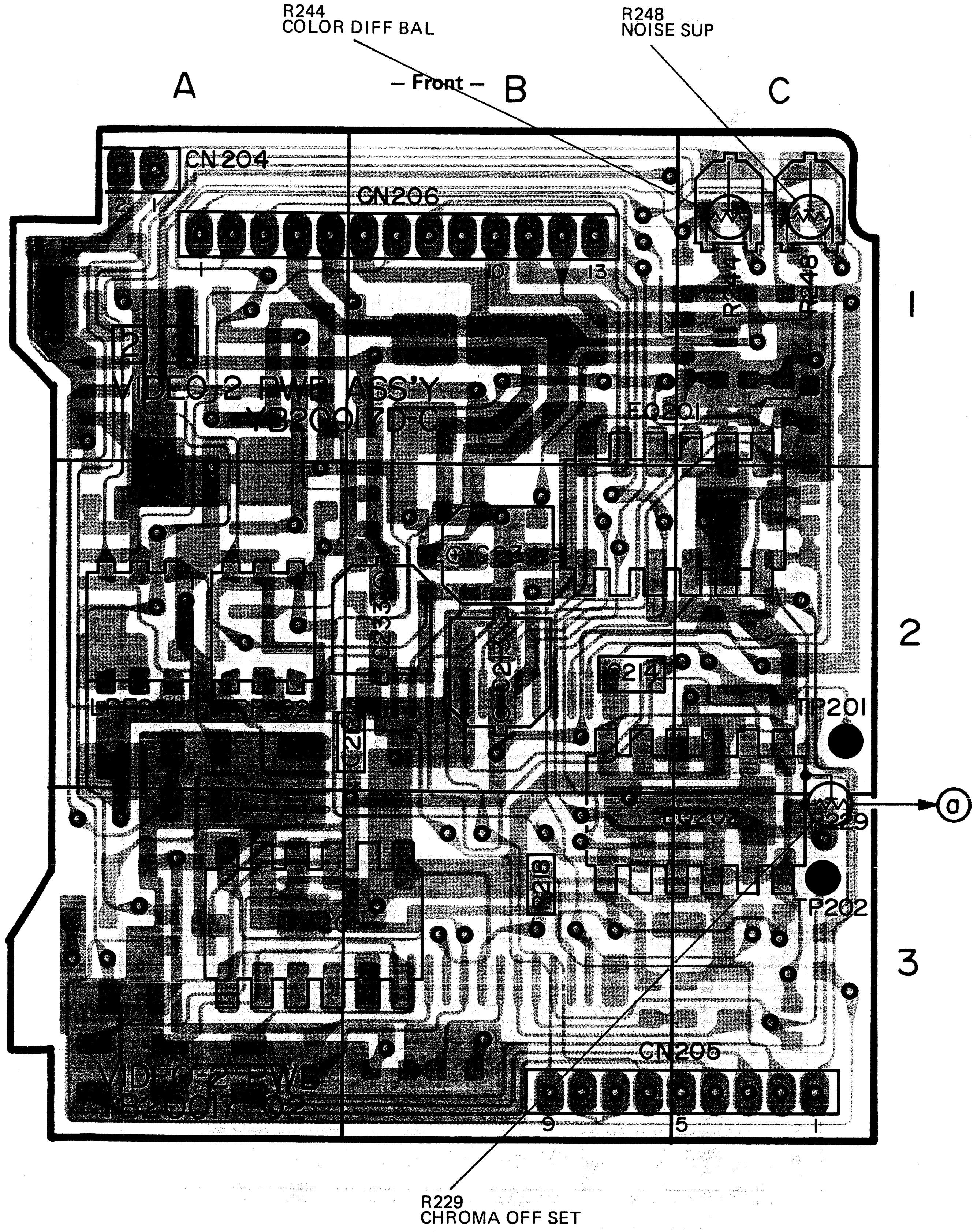
— Front —


A
B
C
D
1
2
3
4
5
6
7
X101
CN102
CN103
CN105
CN106
TP109
TP103
R60
R122

X 2.5 TIMES

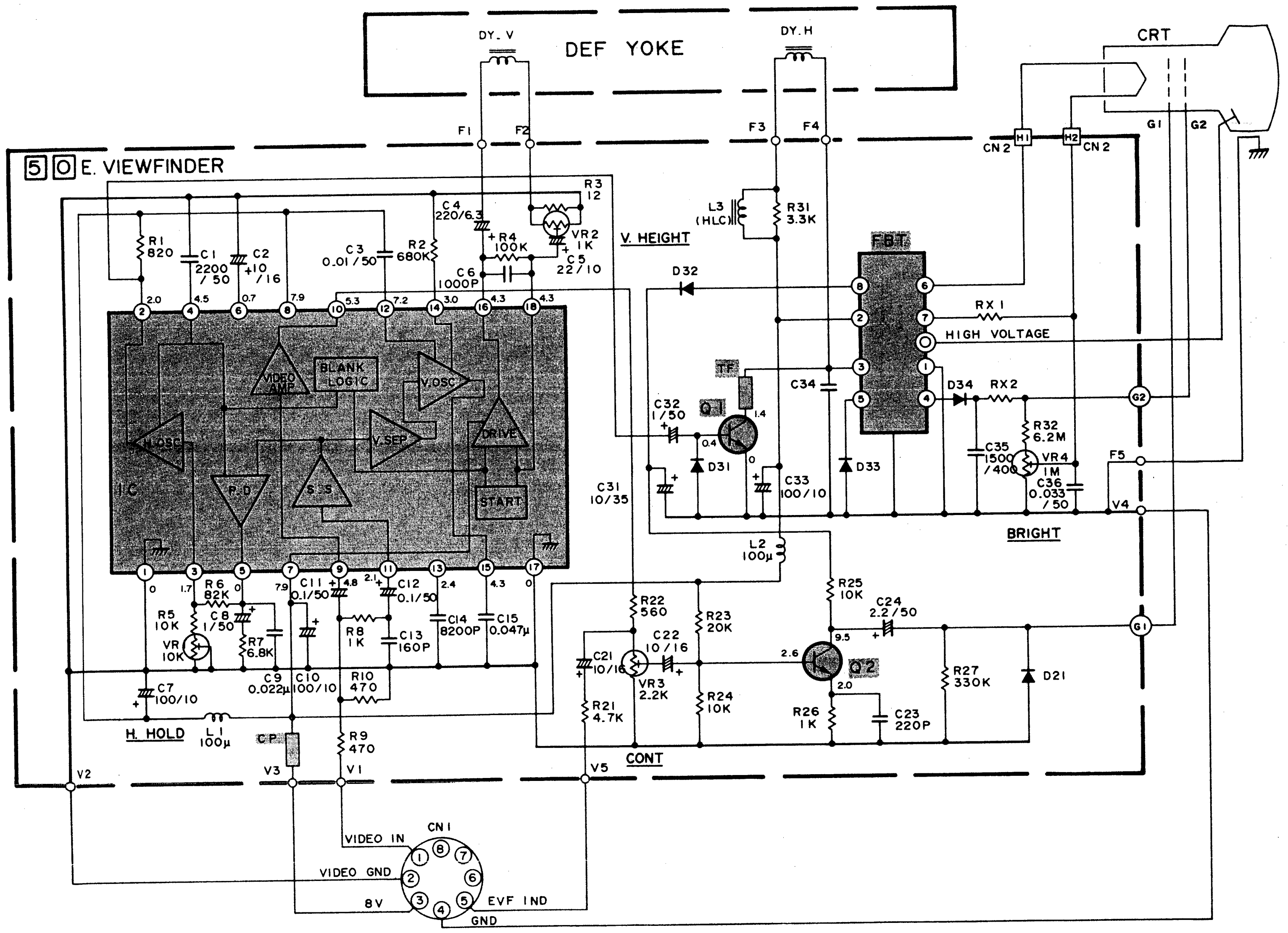
4.36 VIDEO-2 CIRCUIT BOARD


– Rear –
C
B
A
1
2
3
VIDEO-2 PWB ASS'Y
YB20017D-C
CN204
CN205
Q206
Q204
Q208
Q201
TP 201
TP202
C215
VIDEO-2 PWB
YB20017-02
ⓐ


R244
COLOR DIFF BAL
R248
NOISE SUP
A
– Front –
B
C
1
2
3
CN204
CN206
CN205
VIDEO-2 PWB ASS'Y
YB20017D-C
TP201
TP202
R229
ⓐ
R229
CHROMA OFF SET

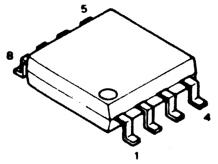
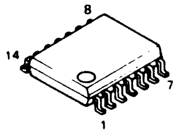
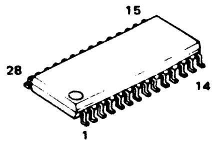
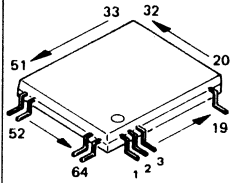
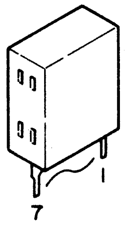
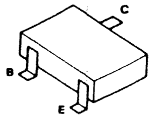
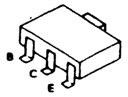
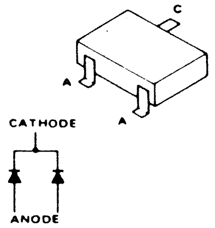
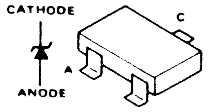
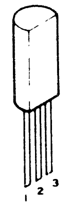
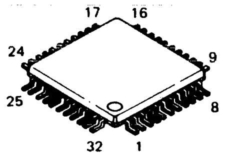
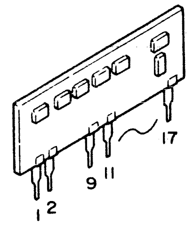
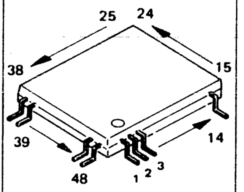
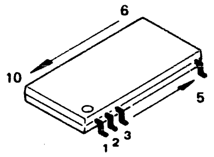
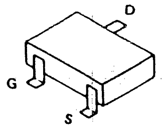
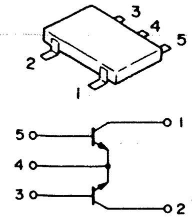
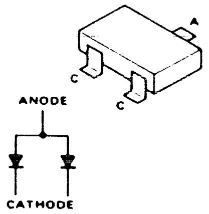
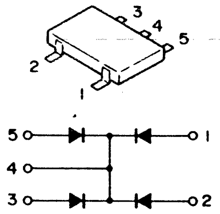
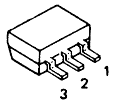
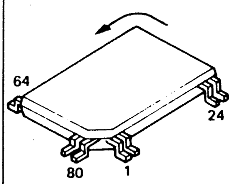
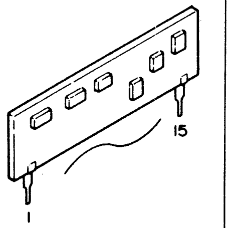
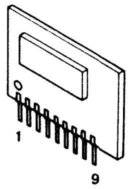
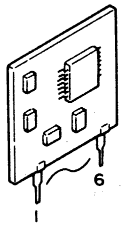
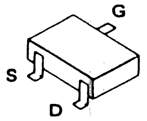
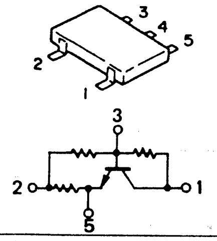
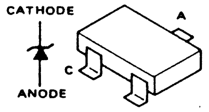
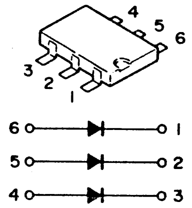
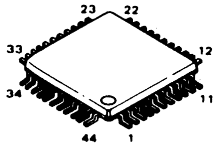
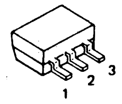
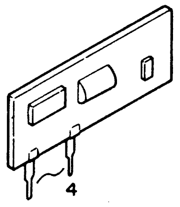
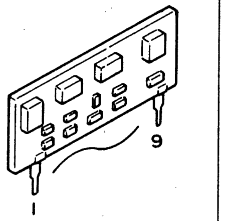
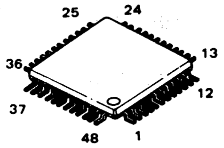
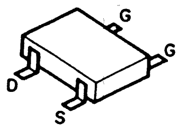
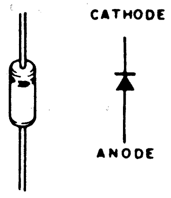
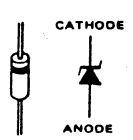
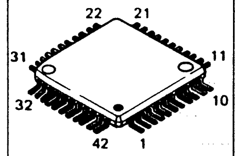
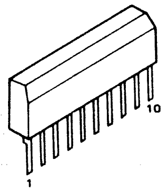
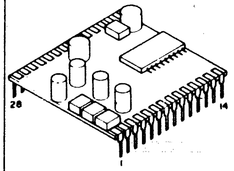
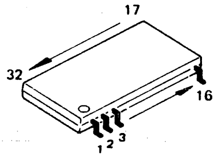
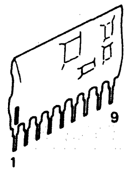
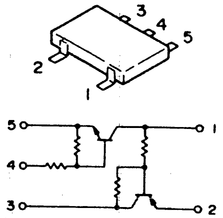
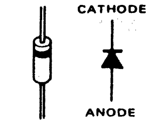
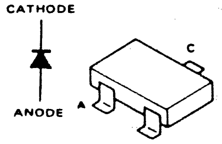
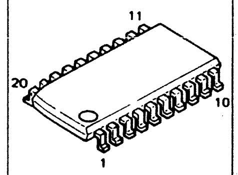
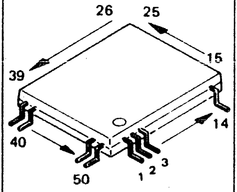
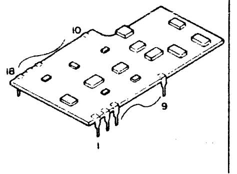
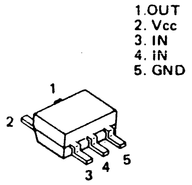
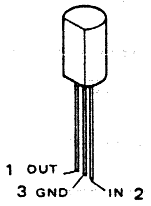
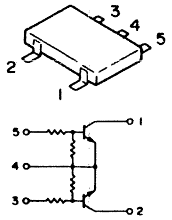
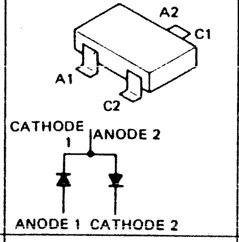
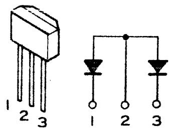
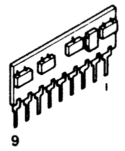
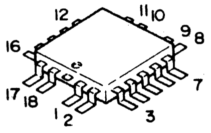
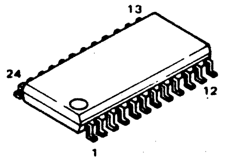
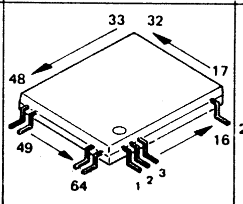
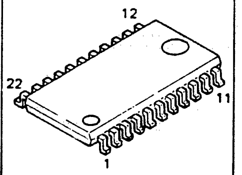
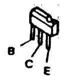
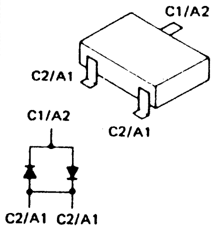
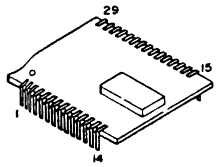
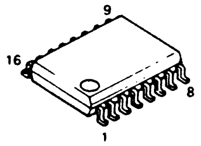
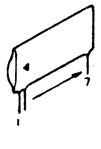
X 3.0 TINES

4.37 E. VIEWFINDER SCHEMATIC DIAGRAM


DEF YOKE
DY. V
DY. H
F1
F2
F3
F4
F5
CRT
CN 2
H1
H2
G1
G2
5 O E. VIEWFINDER
I.C
VIDEO AMP
BLANK LOGIC
V.OSC
H.OSC
V.SEP
DRIVE
P.D
S.S
START
R1 820
C1 2200/50
C2 10/16
C3 0.01/50
R2 680K
C4 220/6.3
R4 100K
R3 12
VR2 1K
C5 22/10
C6 1000P
V. HEIGHT
L3 (HLC)
R31 3.3K
FBT
D32
RX1
HIGH VOLTAGE
TF
Q1
C32 1/50
C34
D34
RX2
R32 6.2M
C35 1500/400
VR4 1M
C36 0.033/50
D31
D33
C31 10/35
C33 100/10
L2 100μ
BRIGHT
V4
R5 10K
R6 82K
C8 1/50
VR 10K
R7 6.8K
C11 0.1/50
C12 0.1/50
R8 1K
C13 160P
C14 8200P
C15 0.047μ
C7 100/10
C9 0.022μ
C10 100/10
R10 470
H. HOLD
L1 100μ
CP
R9 470
R22 560
R23 20K
C22 10/16
C21 10/16
VR3 2.2K
R24 10K
R21 4.7K
R25 10K
C24 2.2/50
Q2
R27 330K
D21
R26 1K
C23 220P
CONT
V1
V2
V3
V5
CN1
VIDEO IN
VIDEO GND
8V
EVF IND
GND

4.38 SEMICONDUCTOR SHAPES

	NAME	L
	IC	
A	AFZ74A001X1	7A
	AFZ74A002X1	7A
	AN2275S	5D
	AN3212S	1C
	AN3323S	1C
	AN3592S	7E
	AN6308S	1A
	AN8009	6E
B	BA10324F	1B
	BA226F	1A
	BA6452F	7C
	BA6993F	1A
	BA7131F	1A
	BA7258AK	4A
	BA7600K	4A
	BA7757K	2B
	BU3721K	4A
	BU4011BF	1B
	BU4584BF	1B
C	CP1088G	1D
H	HD6305Z0F-CV05	3B
	H8D1927A	5E
	H8D7046	4C
	H8D7047	3C
	H8D7048	2C
	H8D7051A	8A
I	IR3702N1	1B
M	MC8089A	3D
	MC8180B	1E
	MC8181D	1E
	MN3106S	1A
	MSM6830	6A
	MSM6831	6A
	MSM6846MS	1A
	MSM6984MS	1A
	MSM6985MS	1A
	MSM6989MS	1A
	M51648FP	6B
	M51799FP	5A
	M5236ML	3A
	M52410FP	6A
	M5282FP	1A
	M54543ASL-A	5B
	M54641FP	2E
N	NJM2904E	1A
S	S-81250AG	2A
	S8054HN	4B
T	TA7374P	8C
	TC4S69F	6D
	TC4S71F	6D
	THE175A	4D
	THE191A	5C
	THE245	8A
	TME234	6C
U	UPC2370GH	2D
	UPC2371GH	2D
	UPC324G2	1B
	UPD4538BG	8B
V	VC2031MP	7B
	VC2038	4E
	VC2039	7D
	VC2041	7C
	VC2043	7D
	VC2044	7D
	VC5026G	6A
	6VT07	3E
	6VT08	3E
	TRANSISTOR	
D	DTA124EU	1F
	DTC124EU	1F
	DTC144ES	7F
	DTC144EU	1F
	DTC144WK	1F
	DTC144WU	1F
F	FMC2	5F
	FMG1	6F
	FMG2	6F
	FMU1	3G
	FMW1	2G
	FMW3	2G
2SA	2SA1036K	1F
	2SA1532	1F
	2SA1576	1F
	2SA1610	1F
	2SA1611	1F
	2SA881R	7F
2SB	2SB1009	7F
	2SB1218	1F
	2SB624	1F
	2SB798	1G
2SC	2SC2412K	1F
	2SC3931	1F
	2SC3936	1F
	2SC4081	1F
	2SC4098	1F
	2SC4099	1F
	2SC4176	1F
	2SC4177	1F
	2SC4178	1F
2SD	2SD1819	1F
2SJ	2SJ146	2F
2SK	2SK198	3F
	2SK620	2F
	2SK665	2F
3SK	3SK179	4F
	DIODE	
D	DAN202U	1H
	DAP202U	2H
	DAP209S	6I
	DA204U	6H
E	ERA81-004	4H
F	FMN1	2I
I	IMN10	3I
M	MA141K	5I
	MA141WA	2H
	MA141WK	1H
	MA143	6H
	MA184	5H
	MA185	5H
	MA3075H	1I
	MA704	5H
	MA716	7H
R	RD5.6EB2	4I
	RD6.8EB2	4I
	RD7.5M	1I
	RD7.5MB3	1I
	RD8.2EB2	4I
	RD8.2EBS	4I
	RD8.2MB2	1I
	1SS133	5H

	IC					TRANSISTOR		DIODE	
	A	B	C	D	E	F	G	H	I
1				 33 32 51 20 52 19 64 1 2 3				 C A A CATHODE ANODE	 CATHODE C A ANODE
2		 17 16 24 9 25 8 32 1		 25 24 38 15 39 14 48 1 2 3			 3 4 5 2 1 5 1 4 3 2	 A C C ANODE CATHODE	 3 4 5 2 1 5 1 4 3 2
3								 CATHODE A C ANODE	 4 5 6 3 2 1 6 1 5 2 4 3
4	 23 22 33 12 34 11 44 1				 25 24 36 13 37 12 48 1			 CATHODE ANODE	 CATHODE ANODE
5	 22 21 31 11 32 10 42 1					 3 4 5 2 1 5 1 4 3 2		 CATHODE ANODE	 CATHODE C ANODE A
6		 26 25 39 15 10 40 14 50 1 2 3		 1.OUT 2. Vcc 3. IN 4. IN 5. GND 1 2 3 4 5	 1 OUT 3 GND IN 2	 3 4 5 2 1 5 1 4 3 2		 A2 C1 A1 C2 CATHODE 1 ANODE 2 ANODE 1 CATHODE 2	
7		 12 11 10 9 8 16 7 17 18 1 2 3		 33 32 48 17 49 16 64 1 2 3				 C1/A2 C2/A1 C1/A2 C2/A1 C2/A1 C2/A1	
8									

SECTION 5
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

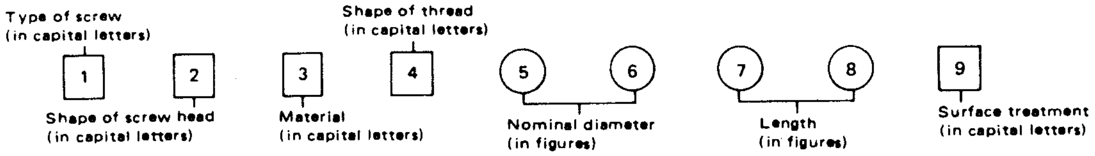
NOTE :

[M] indicates mechanical symbol number.

5.1 STANDARD PART NUMBER CODING

5.1.1 Screw coding

Standard screw part numbers are as follows.


Type of screw
(in capital letters)
Shape of thread
(in capital letters)
1
2
3
4
5
6
7
8
9
Shape of screw head
(in capital letters)
Material
(in capital letters)
Nominal diameter
(in figures)
Length
(in figures)
Surface treatment
(in capital letters)

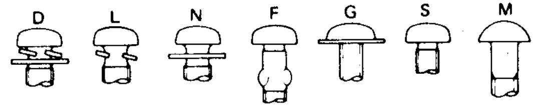
Type of screw (first digit)

S	Normal screws
D	Assembled machine screws (with plain and spring washers)
L	" (with spring washer)
N	" (with plain washer)
F	Feather screws
G	Washer head tapping screws
M	Wood screws

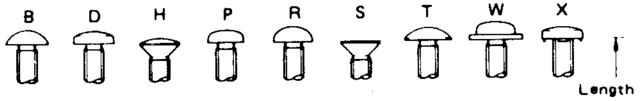
Shape of screw head (second digit)

B	Brazier head
D	Binding head
H	Oval countersunk head
P	Pan head
R	Round head
S	Flat head
T	Truss head
W	Washer head (machine screws)
X	Toothed head

–Type of screw (first digit) –



– Shape of screw head (second digit) –


B
D
H
P
R
S
T
W
X
Length

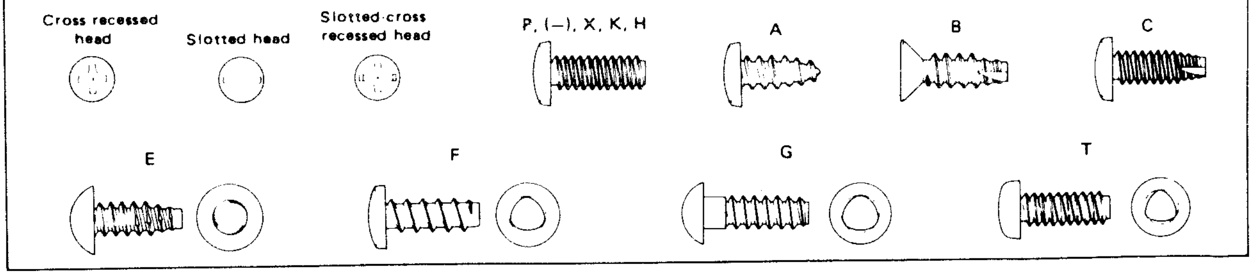
Material (third digit)

S	Steel
E	Stainless steel
C	Cast iron
U	Copper
B	Brass
P	Phosphor bronze
N	Nickel silver
Y	Cast brass
A	Aluminum
Z	Zinc alloy
K	Polycarbonate

Shape of thread (fourth digit)

P	Cross recessed head screws
(–)	Slotted head machine screws
X	Slotted-cross recessed head machine screws
K	Cross recessed head machine screws for precision equipment (type 1)
H	" (type 3)
A	Cross recessed head tapping screws (type 1)
B	" (type 2)
C	" (type 3)
E	Cross recessed head special tapping screws (brand : evertight)
F	" (brand : P-tight)
T	" (brand : taptight)
G	"

– Shape of thread (fourth digit) –


Cross recessed head
Slotted head
Slotted-cross recessed head
P, (–), X, K, H
A
B
C
E
F
G
T

Nominal diameter (fifth and sixth digits)

The fifth and sixth digits indicate a nominal diameter or dimension. If the dimension exceeds 10 mm, three digits are used. The number indicates a nominal diameter or dimension, given in millimeters, multiplied by ten.

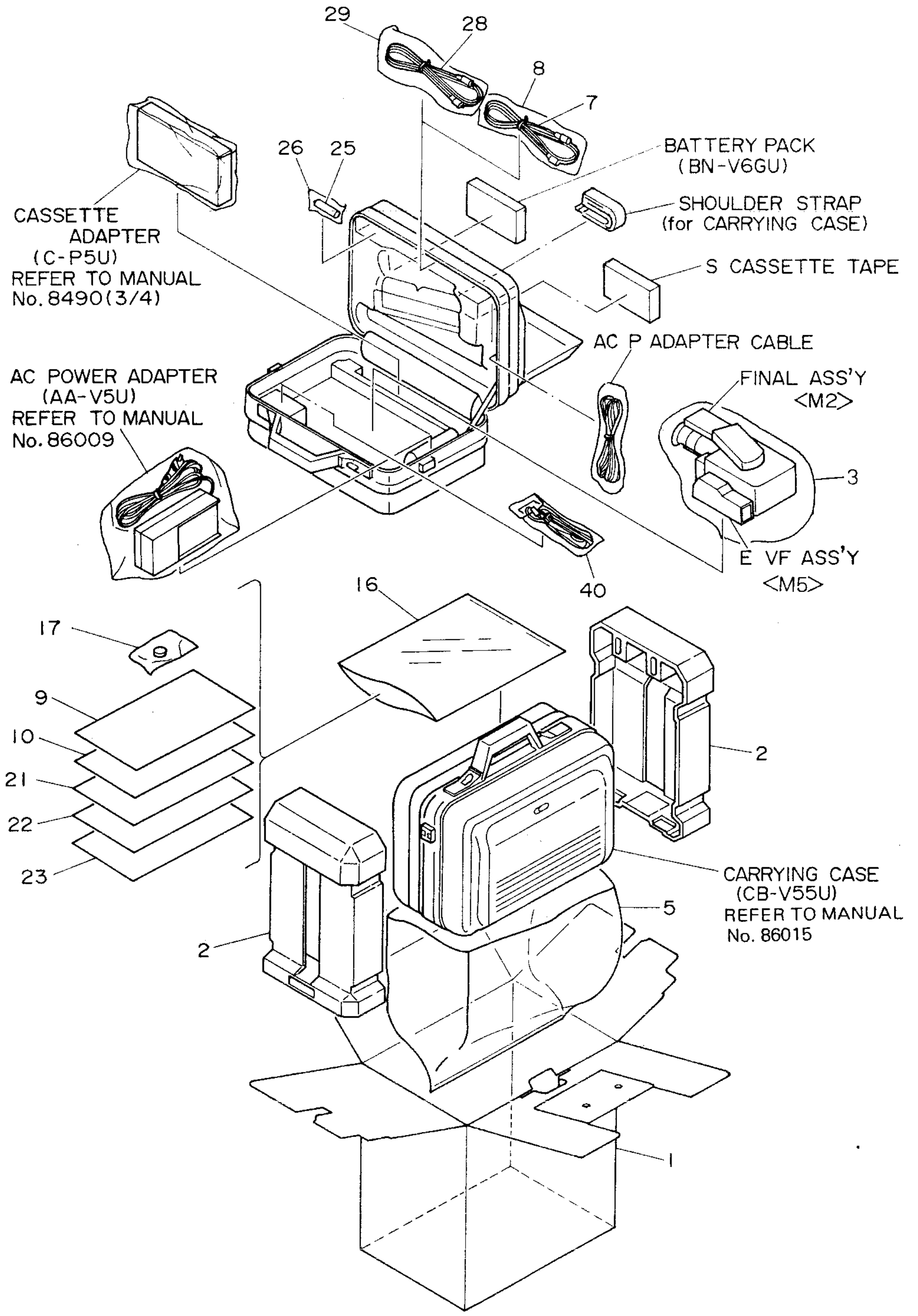
Length (seventh and eighth digits)

The seventh and eighth digits indicate length in millimeters. The preceding figure is zero when the dimension is smaller than 10 mm. For machine screws used in precision equipment whose length is given in units of 0.1 mm, the number indicates ten times the size of their length.

Surface treatment (ninth digit)

Z	Dichromate treatment after galvanizing (MFZn II-C)
N	Nickel plating (MFNi II, MFNi I)
R	Chromium plating (MBCr II, MBCr I)
G	Silver plating (SP4)
B	Black coating after plating
F	Blackening of iron (FB)
M	Blackening after galvanizing
K	Pickling of brass (PF2)
P	Phosphate treatment
W	Uni-chrome plating
L	Coated with transparent paint
A	Colored red after galvanizing (MFZn II-C)
C	Colored blue after galvanizing (MFZn II-C)
T	Colored green after galvanizing (MFZn II-C)
V	Colored purple after galvanizing (MFZn II-C)

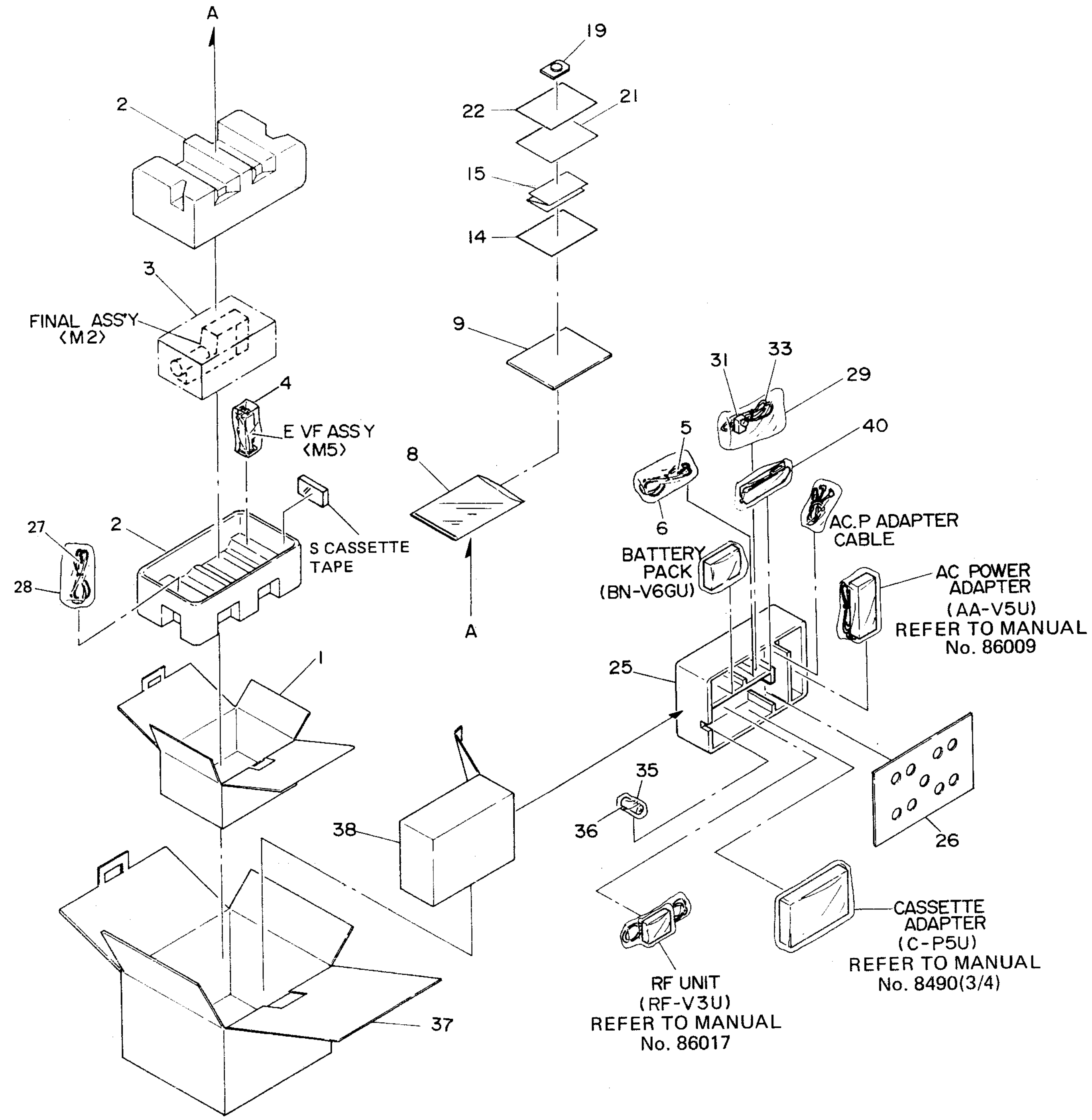
5.2 PACKING ASSEMBLY < M1 > (For USA)


29
28
8
7
26 25
BATTERY PACK (BN-V6GU)
SHOULDER STRAP (for CARRYING CASE)
S CASSETTE TAPE
CASSETTE ADAPTER (C-P5U) REFER TO MANUAL No.8490(3/4)
AC P ADAPTER CABLE
FINAL ASS'Y <M2>
3
AC POWER ADAPTER (AA-V5U) REFER TO MANUAL No.86009
E VF ASS'Y <M5>
40
16
17
9
10
21
22
23
2
2
CARRYING CASE (CB-V55U) REFER TO MANUAL No. 86015
5
1

* PACKING ASSEMBLY,FOR U.S.A <M1> *

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	YQ30149	PACKING CASE
	2	YQ30150A	CUSHION ASSY
	3	YQM30021-2	POLY BAG
	5	QPGA050-04505	POLY BAG
⚠	7	YU40272-3	CABLE ASSEMBLY(AUDIO/VIDEO)
	8	QPGA015-02505	POLY BAG
⚠	9	YU30052-10	INSTRUCTIONS
	10	BT-20062	WARRANTY CARD
	16	QPGA025-03505	POLY BAG
⚠	17	YU40547	BATT.
⚠	21	PU33941-3-2	SAFETY CAUTION
	22	BT-20046C	TOLL FREE CARD
	23	TCN-3318	TAPE CATALOG
	25	UM-3DJ	BATTERY
	26	PQM30021-48	POLY BAG
⚠	28	YQ10055C	S CABLE
	29	QPGA015-02505	POLY BAG
⚠	40	YQ10051A	SHOULDER STRAP

5.3 PACKING ASSEMBLY <M1> (For CANADA)


A
19
2
22
21
15
14
3
FINAL ASS'Y
<M2>
9
4
E VF ASS'Y
<M5>
31
33
29
5
40
8
27
2
S CASSETTE
TAPE
6
AC.P ADAPTER
CABLE
28
BATTERY
PACK
(BN-V6GU)
AC POWER
ADAPTER
(AA-V5U)
REFER TO MANUAL
No. 86009
A
25
1
35
38
36
26
CASSETTE
ADAPTER
(C-P5U)
REFER TO MANUAL
No. 8490(3/4)
RF UNIT
(RF-V3U)
REFER TO MANUAL
No. 86017
37

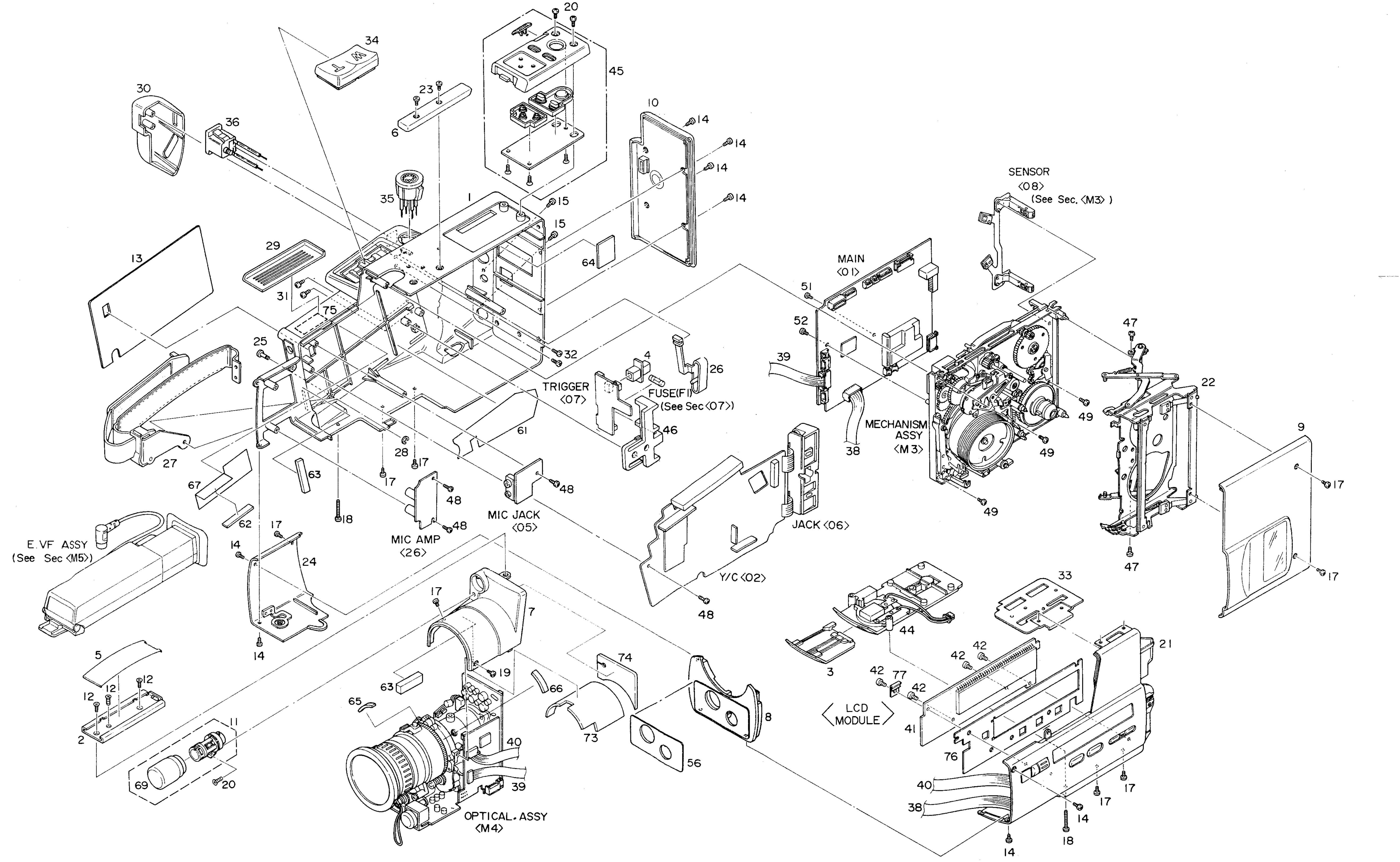
****

* PACKING ASSEMBLY, FOR CANADA <M1> *

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	YQ30151-2	PACKING CASE
	2	YU30048A-1	CUSHION ASSY
	3	YQM30021-2	POLY BAG
	4	YQM30021-7	POLY BAG
⚠	5	YQ10055C	S CABLE
	6	QPGA015-02505	POLY BAG
	8	QPGA025-03505	POLY BAG
⚠	9	YU30052-11	INSTRUCTIONS
	14	BT-20025J	WARRANTY CARD
⚠	15	PU33941-3-2	SAFETY CAUTION

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	19	YU40547	BATTERY
	21	BT-20071A	INSTRUCTION GUIDE
	22	TCN-3318	TAPE CATALOG
	25	YQ20079	ACC TRAY
	26	YQ40493	ACC.T.SHEET
⚠	27	YU40272-3	CABLE ASSEMBLY(AUDIO/VIDEO)
	28	QPGA015-02505	POLY BAG
	29	QPGA015-02505	POLY BAG
⚠	31	PU59135	MATCHING TRANSFORMER
⚠	33	PU54394-2	CABLE ASSY
	35	PQM30021-48	POLY BAG
	36	UM-3DJ	BATTERY
	37	YQ30129-2	PACKING CASE
	38	YQ40490	PACKING CASE
⚠	40	YQ10051A	SHOULDER STRAP

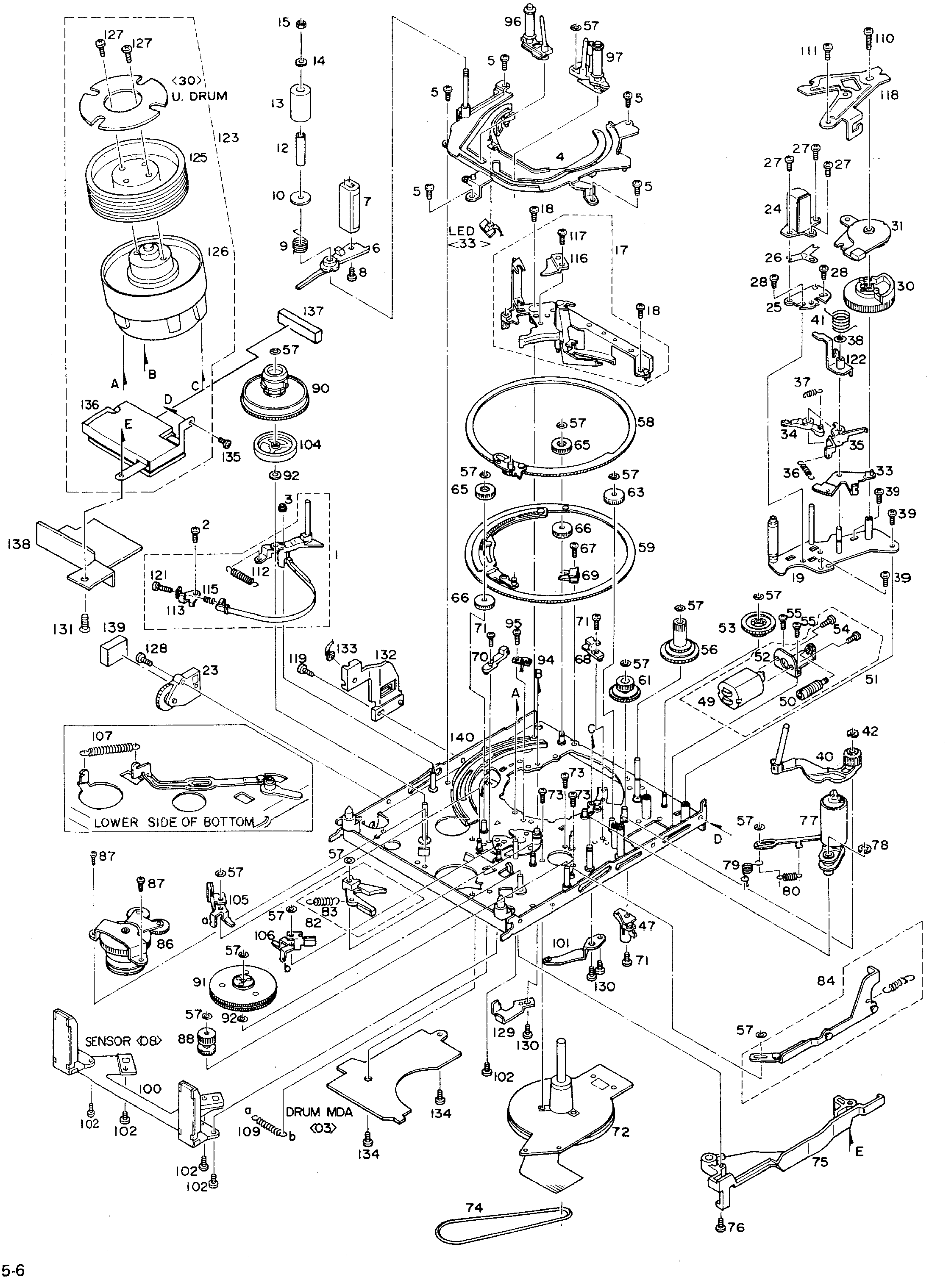
5.4 FINAL ASSEMBLY < M2 >


20
34
45
30
23
6
36
10
14
14
14
14
35
1
15
15
13
29
64
SENSOR
<08>
(See Sec. <M3>)
MAIN
<01>
51
52
31
75
25
32
4
26
TRIGGER
<07>
FUSE(F1)
(See Sec<07>)
39
MECHANISM
ASSY
<M3>
47
22
49
49
49
9
27
28
17
61
46
38
17
63
67
62
18
48
48
48
MIC JACK
<05>
MIC AMP
<26>
JACK <06>
17
17
24
14
E.VF ASSY
(See Sec <M5>)
Y/C <02>
48
47
33
17
17
7
44
21
3
42
42
42
42
77
5
12
12
12
19
63
74
66
65
11
2
14
73
8
56
LCD
MODULE
41
76
40
40
38
69
20
39
OPTICAL. ASSY
<M4>
17
17
14
14
18
14

FINAL ASSEMBLY <M2>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	1	YQ10037F-17	LOWER CASE ASSY, INCL. 24–32, 75
	2	YQ40419-1-2	SHOE
⚠	3	YQ30092-5	BACK UP BATT. COVER
	4	YQ40418-2	ALARM KNOB
	5	YQ40420-1-2	SHOE SPRING
	6	YQ40421-1-1	DECO PLATE
⚠	7	YQ30158A-1	FRONT COVER ASSY, INCL. 73, 74
⚠	8	YQ30123D	FRONT PANEL ASSY, INCL. 56
⚠	9	YQ30159B-2	CASS.COVER ASSY
	10	YQ20073-4-9	OPERATION UNIT
	11	YU40196-4	MICROPHONE, INCL. 69
	12	SSSP2005D	SCREW,X3
⚠	13	YU20027-4	BATTERY BASE SHEET
	14	YQM30032-2-2	SPECIAL SCREW,X8
	15	YQM30032-6-2	SPECIAL SCREW,X2
	17	YQM30032-1-2	SPECIAL SCREW,X8
	18	YQM30032-7-2	SPECIAL SCREW,X2
	19	YQM30032-9	SPECIAL SCREW
	20	YQM30032-4-2	SPECIAL SCREW,X3
⚠	21	YQ10038E-8	UPPER CASE ASSY
	22	YQ20068B-3	CASS.HOUSING ASSY
	23	YQM30032-16-2	SPECIAL SCREW,X2
⚠	24	YQ20062-6-12	SIDE PANEL
	25	YQ40413	STUD
	26	YQ30091-2-4	BUTTON(TRIGGER)
	27	YQ20064F-9	GRIP BELT ASSY
	28	REE2500	E.RING
	29	YQ30162	GRIP RUBER
	30	YQ30098-5-8	FINGER REST
	31	SSSP2006D	SPECIAL SCREW,X2
	32	SDSF2006Z	TAPPING SCREW,X2
	33	YQ40417	SHOE BRACKET
	34	YU40204-2	ZOOM SWITCH
	35	YS40011A	E. VF CONNECTOR ASSY
	36	YS40004B	DC JACK ASSY
	38	YU40210-2	FLAT WIRE3
		OR YU40330	FLAT WIRE3
		OR YU40333	FLAT WIRE3
	39	YU40211-3	FLAT WIRE4
		OR YU40334	FLAT WIRE4
		OR YU40331-2	FLAT WIRE4
	40	YU40212-3	FLAT WIRE5
		OR YU40332	FLAT WIRE5
		OR YU40335	FLAT WIRE5
	41	YU40242-3-1	LCD MODULE
	42	SDSF2005Z	TAPPING SCREW,X4
	44	YQ30099A-2	BASE ASSY
	45	YQ30059-6	DATE UNIT
	46	YQ30090-1-1	TRG.P.STTOPPER
	47	SPSK1730M	SCREW,X2
	48	SDSF2006Z	TAPPING SCREW,X4
	49	SPSG2608Z	SCREW,X3
	51	SPSH1740Z	SCREW
	52	SPSG2004M	SCREW
	56	YQ30154-3	FRONT PLATE
	61	YQ40545	SHIELD SPACER 2
	62	YQM30029-8	SPACER
	63	YQM30029-7	SPACER,X2
	64	YQM30029-9	SPACER
	65	YQM30029-4	SPACER
	66	YQM30029-5	SPACER
	67	YQ40549	SLD.SPACER (1U)
	69	YU40196-001	WINDOW SCREEN
	73	YQ40527	SHIELD (1)
	74	YQ40528-1-1	SHIELD (2)
	75	YQ40546	SHIELD SPACER 3
	76	YQ30175-1-1	SHIELD PLATE
	77	YQ40569	EARTH CILP

5.5 MECHANISM ASSEMBLY < M3 >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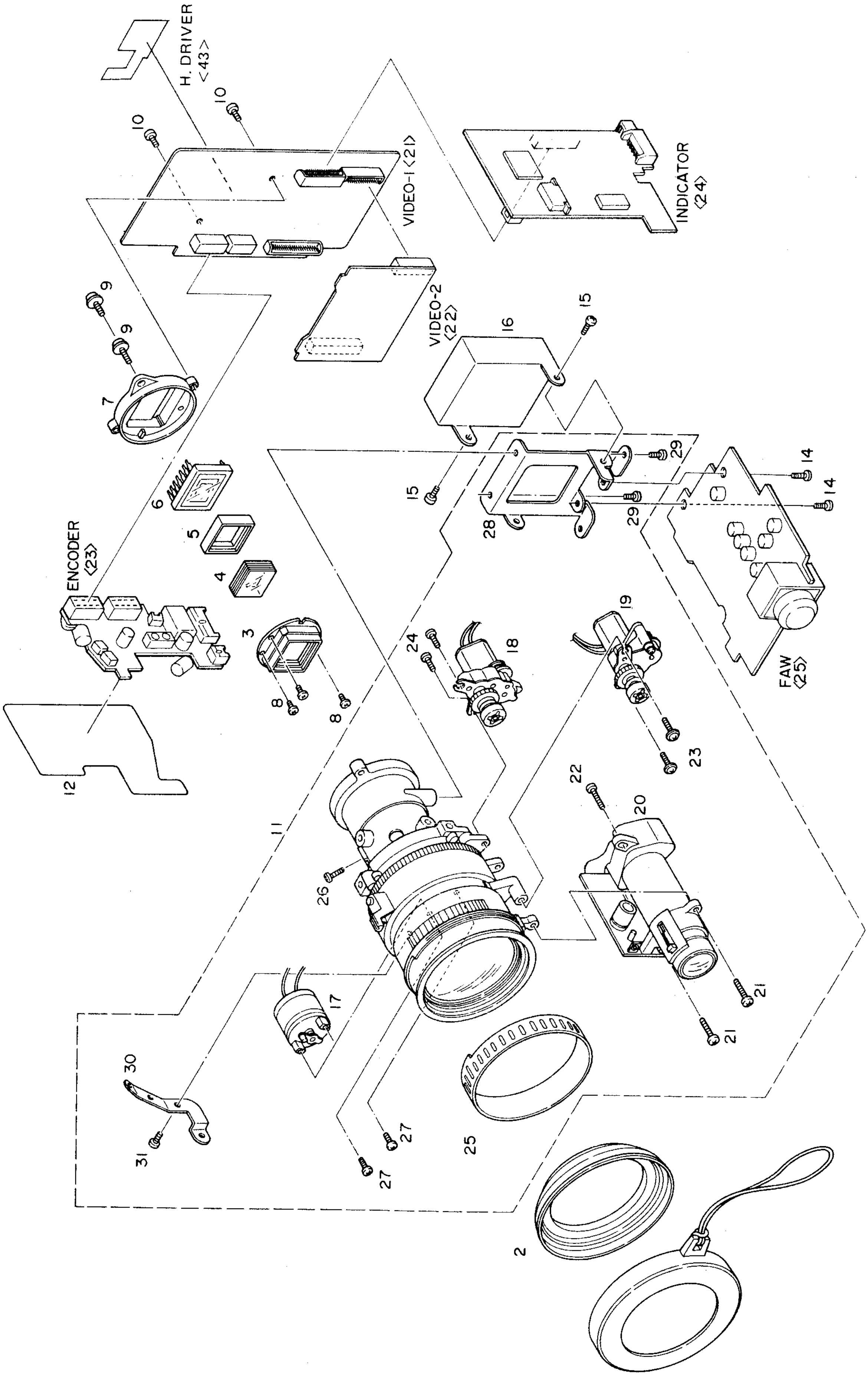
7. MECHANISM ASSEMBLY <M3>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	YQ40389A-2	T.SER AY,INCL.112,113,115,121
	2	SPSK1730M	SCREW
	3	YQ40059	CAP
	4	YQ40387A-1	GUIDE RAIL ASSY
	5	SPSH1725M	SCREW,X5
	6	YQ20050-1-5	FE HEAD ARM
	7	YU40492	FULL ERASE HEAD
	8	SPSK1630M	SCREW
	9	YQ40391-1-2	TORSION SPRING
	10	YQ40063	FLANGE
	12	YQ40498-1-1	COLLAR
	13	YQ40497-1-2	IMPEDANCE ROLLER
	14	YQ40556	SPACER
	15	PQ42708	NUT
	17	YQ40066A-9	UV BASE ASSY,INCL.116,117
	18	SPSH1730M	MINI SCREW,X2
	19	YQ40343A-3	SUB DECK ASS'Y
	23	YU40001	DAMPER
	24	YU40232	AUDIO/CONTROL HEAD
	25	YQ40353	X PLATE
	26	YQ40354	HEAD SPRING
	27	SPSK1730M	SCREW,X3
	28	SPSK1720M	MINI SCREW,X2
	30	YQ20057	CAM GEAR
	31	YU40233	CAM ENCODER
	33	YQ40356A-1	ARM GEAR ASSY
	34	YQ40358	LOCK ARM 1
	35	YQ40359	LOCK ARM 2
	36	YQ40342	TENSION SPRING
	37	YQ40362	TENSION SPRING
	38	PQM30017-25	SLIT WASHER
	39	SPSH1725M	SCREW,X3
	40	YQ40364A-2	MIDDLE POLE ASSY
	41	YQ40361	TORSION SPRING
	42	PQM30017-23	SLIT WASHER
	47	YQ40099-1-2	LOADING GUIDE
⚠	49	YU40258G-2	LOADING MOTOR
	50	YQ40103A	WORM ASSY
	51	YQ40340A-4	L.M.BKT ASSY,INCL.49,50,52,54
	52	YQ40341A-2	LOADING MOTOR BRACKET SA
	53	YQ40108	WORM WHEEL
	54	SPSK1720M	MINI SCREW,X2
	55	SPSK1725M	SCREW,X2
	56	YQ40109	TERMINAL GEAR
	57	PQM30017-27	SLIT WASHER,X15
	58	YQ40232A-1	SUP LOADING RING ASSY
	59	YQ40115A-3	TU LOADING RING ASSY
	61	YQ40122-1-2	LOADING GEAR 1
	63	YQ40123	LOADING GEAR 2
	65	YQ40124	RING GUIDE GEAR(S),X2
	66	YQ40125	RING GUIDE GEAR(T),X2
	67	SPSK1725M	SCREW
	68	YQ40126	RING GUIDE 1
	69	YQ40127	RING GUIDE 2
	70	YQ40128	RING GUIDE 3
	71	SPSH1725M	SCREW,X3
⚠	72	YU40235V	CAPSTAN MOTOR ASSY
⚠		OR YU40235V-2	CAPSTAN MOTOR ASSY
	73	SPSH1725M	SCREW,X3
	74	YQM30003-2	BELT
	75	YQ30082-1-1	CAPSTAN MOTOR COVER
	76	SPSH1740M	SCREW
	77	YQ40366A-4	PINCH ROLLER ARM ASSY,INCL.80
	78	REE2500	"E" RING
	79	YQ40483-1-2	TORSION SPRING
	80	YQ40481	TENSION SPRING
	82	YQ40381A-2	SEARCH BRAKE ASSY,INCL.83
	83	YQ40383	TENSION SPRING
	84	YQ40384A-1	SEARCH BRAKE LEVER ASSY
	86	YU40007-2	CENTER PULLEY BRACKET ASSY
	87	SPSH1725M	SCREW,X2
	88	YQ40147-1-1	TAKE-UP GEAR
	90	YU40239-1-1	SUP R.DISC ASSY
	91	YU40240	TU CLUTCH ASSY
	92	Q03093-835	WASHER,X2
	94	YU40234	DEW SENSOR
	95	SPSH1725M	SCREW
	96	YQ40083C-6	SUP POLE BASE ASSY
	97	YQ40093A-9	TU POLE BASE ASSY
	100	YS40012D	SENSOR PWB ASSY
	101	YU40241	BRUSH
	102	SPSH1730M	MINI SCREW,X5
	104	YU40286	SUP BAND REEL ASSY
	105	YQ40376A-1	MAIN BRAKE ASSY (SUPPLY)
	106	YQ40378A-1	MAIN BRAKE ASSY(TU)
	107	YQ40385-1-2	TENSION SPRING
	109	YQ40380	TENSION SPRING
	110	SPSH1780M	SCREW
	111	SPSH1725M	SCREW
	112	YQM30001-13-1	TENSION SPRING
	113	YQ40266	ADJUST PLATE
	115	YQM30002-1	COMPRESSION SPRING
	116	YQ40068-1-1	POLE BASE GUIDE
	117	YQM30032-21	MINI SCREW
	118	YQ30081-1-1	MIDDLE POLE STOPPER
	119	SPSH1740M	SCREW
	121	SPSK1780M	MINI SCREW
	122	YQ40352A-2	LOCK ARM 3 ASSY
⚠	123	YDV2002A-2	DRUM ASSY,INCL.125-127,136
	125	YDM2002A-3	UPPER DRUM ASSY
	126	YDM2004A	LOWER DRUM MOTOR ASSY
	127	PQ41535-4	SCREW,X2
	128	SPSH1760M	SCREW
	129	YQ40256	SHIELD COVER
	130	SPSH1730M	MINI SCREW,X3
	131	PQ41450	MINI SCREW
	132	YQ30113	E.SENS.BRACKET
	133	TPS605	PHOTO TRANSISTOR
	134	PQ41450-2	SCREW,X2
	135	SPSH1720M	SCREW
	136	TME174A	PRE AMP
	137	YQM30029-6	SPACER
	138	YU30143	SHIELD PLATE
	139	YQ40520	DAMPER COVER
	140	YQ10033A-5	MAIN DECK ASSY

5.6 OPTICAL BLOCK ASSEMBLY < M4 >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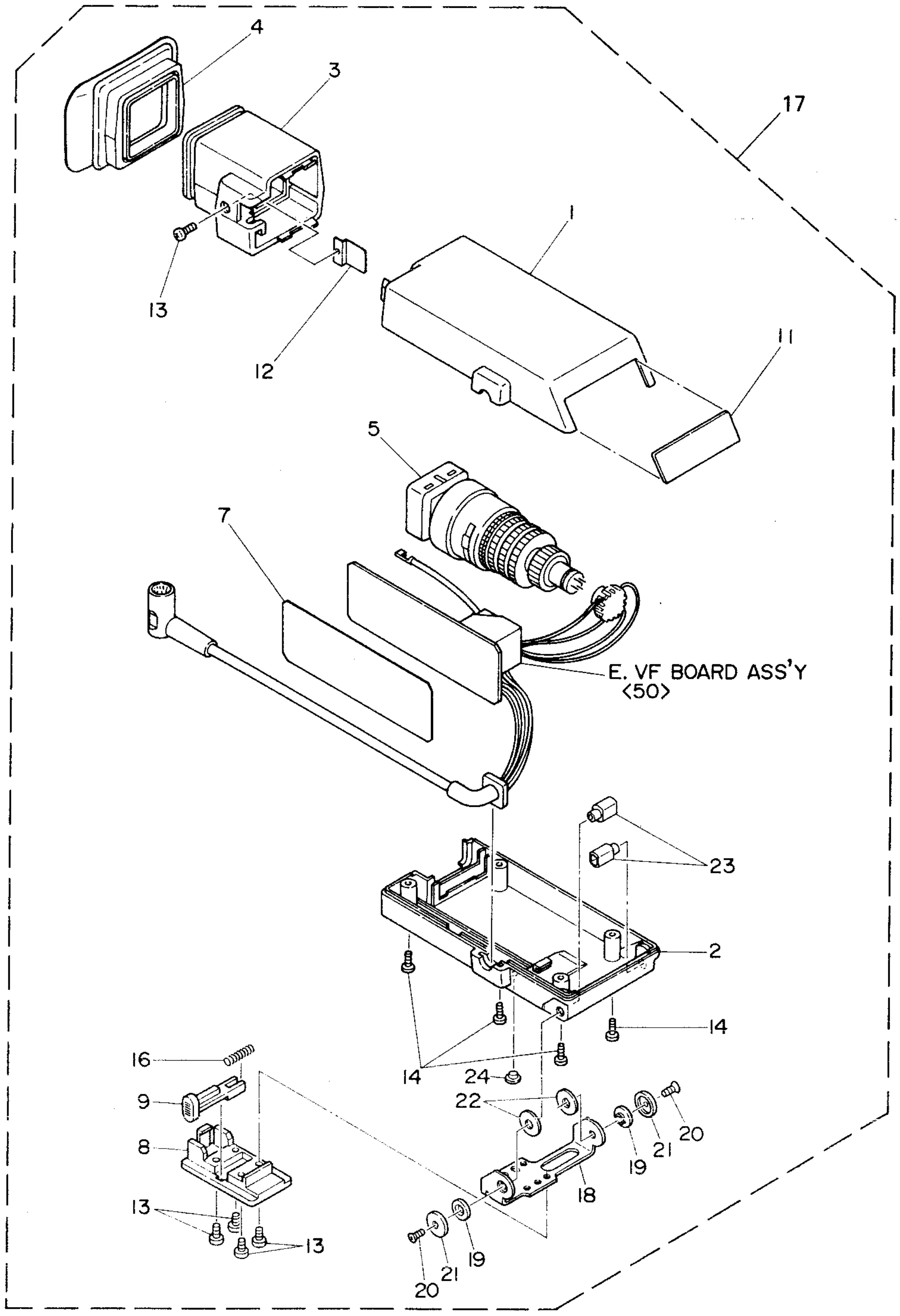
8. OPTICAL BLOCK ASSEMBLY <M4>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	YQ40437A	HOOD CAP ASSY
	2	YU40190-3	HOOD
	3	YQ30096	OPTICAL LPF HOLDER
	4	YU40402	OPTICAL LPF
	5	PQ42339	SPACER RUBBER
	6	UPD3551D	IC
	7	YQ30095	IMAGER HOLDER
	8	SPSK2004F	MINI SCREW,X3
	9	DPSP2008Z	SCREW,X2
	10	SPSP2004Z	SCREW,X2
⚠	11	YU40189	OPTICAL BLOCK ASSY,INCL.17-31
	12	YU30130-1-2	SHIELD PLATE
	14	SPSH1740Z	SCREW,X2
	15	SPSH1740Z	SCREW, X2
⚠	16	YU40192-5	DC-DC CONVERTER
⚠		OR YU40200-3	DC-DC CONVERTER
	17	YU40189-001	IRIS MOTOR
	18	YU40189-002	ZOOM SENSOR
	19	YU40189-003	AUTO FOCUS MOTOR
	20	YU40189-004	LCD SENSOR
	21	YU40189-005	SCREW,X2
	22	YU40189-006	SCREW
	23	YU40189-007	SCREW,X2
	24	YU40189-008	SCREW,X2
	25	YU40189-009	RABBER
	26	YU40189-010	SCREW
	27	YU40189-011	SCREW,X2
	28	YQ40431	OP BRACKET
	29	SDSF2605Z	TAPPING SCREW,X2
	30	YQ40432-1-1	LENS BRACKET
	31	SDSF2605Z	TAPPING SCREW

5.7 ELECTRONIC VIEWFINDER ASSEMBLY < M5 >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****
*   5. ELECTRICAL VIEFINDER ASSEMBLY <M5>   *
****

*⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	1	YU40356	TOP CASE
⚠	2	YU40357	BOTTOM CASE
	3	YU40374	LENS ASSY
	4	YU40384	EYE CAP
⚠	5	YU40349	CRT/DY ASSY
	7	YU40376	INSULATOR
	8	YU40360	SHOE
	9	YU40361-2	LEVER
	11	YQ30121-2	E-VF MARK
	12	YU40383	PLATE SPRING
	13	YU40363	SCREW(C),X5
	14	YU40373	SCREW(A),X4
	16	YU40362	SPRING
⚠	17	YU30045F-5	E. VIEWFINDER AY, INCL. 1–16, 18–24
	18	YU40359	ARM
	19	YU40364	SPACER, X2
	20	YU40476	SCREW(B),X2
	21	YQ40573	COVER,X2
	22	YU40365	BUSHING,X2
	23	YU40367	LEVER PIN,X2
	24	YU40542	CAP

SECTION 6
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS– All resistance values are in ohms (Ω), unless otherwise indicated.

k : 1,000 (Kilo)
M : 1,000,000 (Mega)
Chip R : Chip Resistor
Chip VR : Chip Variable Resistor
Comp. R : Composition Resistor
CR : Carbon Film Resistor
FR : Fusible Resistor
MFR : Metal Film Resistor
MPR : Metal Plate Resistor
OMR : Oxide Metal Film Resistor
PMR : Precision Metal Film Resistor
UFR : Unflammable Resistor
VR : Variable Resistor (Potentiometer)
WR : Wire Wound Resistor

CAPACITORS–All capacitance values are in μF, unless otherwise indicated.

pF : μμF (Pico farad)
C Cap : Caramic Capacitor
Chip Cap : Chip Capacitor
Chip T Cap : Chip Tantalum Capacitor
E Cap : Electrolytic Capacitor
FM Cap : Film Mica Capacitor
LL Cap : Low Leak Current Electrolytic Capacitor
MM Cap : Metalized Mylar Capacitor
MP Cap : Metalized Paper Capacitor
MY Cap : Mylar Capacitor
NP Cap : Non-polar Capacitor
PC Cap : Polycarbonate Capacitor
PP Cap : Polypropylene Capacitor
PS Cap : Polystyrol Capacitor
T Cap : Tantalum Capacitor
TF Cap : Thin Film Capacitor
TR Cap : Trimmer Capacitor

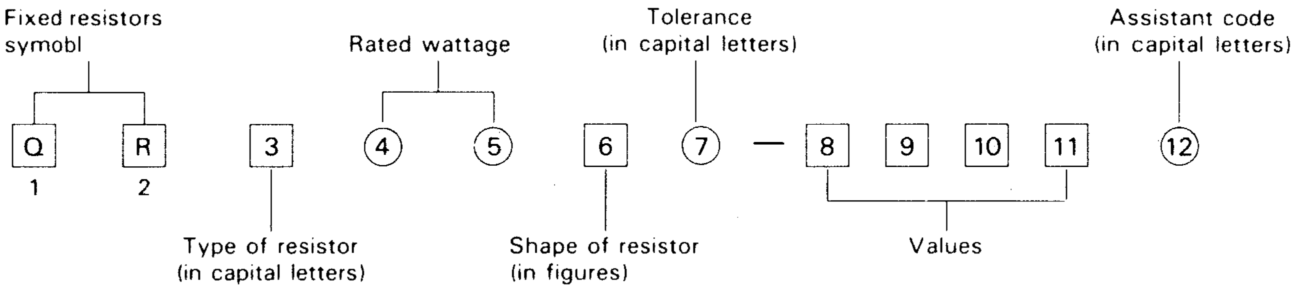
NOTES:

- [2 digits] indicates circuit board symbol number.
- "X " indicates quantity per set.

6.1 STANDARD PART NUMBER CODING

6.1.1 Fixed resistor coding

Fixed resistor part numbers are as follows.


Fixed resistors
symobl
Rated wattage
Tolerance
(in capital letters)
Assistant code
(in capital letters)
Q
R
1
2
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—
8
9
10
11
12
Type of resistor
(in capital letters)
Shape of resistor
(in figures)
Values

Type of resistor (third digit)

C	Composition resistors
D	Carbon film resistors
F	Unflammable resistors
G	Oxide metal film resistors
H	Fusible resistors
M	Metal plate resistors
S	Metal glazed resistors
V	Precision metal film resistors
W	Wire wound resistors
X	Metal film resistors
Z	Special resistors

Rated wattage (fourth and fifth digits)

A0	1/10 W
18	1/8 W
16	1/6 W
14	1/4 W
12	1/2 W
01	1 W
02	2 W
03	3 W
04	4 W
05	5 W
06	6 W
07	7 W
75	7.5 W
08	8 W
10	10 W
15	15 W
A6	16 W
20	20 W
30	30 W

Tolerance (seventh digit)

F	± 1 %
G	± 2 %
J	± 5 %
K	± 10 %
M	± 20 %

Assistant code (twelfth digit)

A	Small type
B	Small type
S	Small type
Y	Lead taping
Z	Lead taping

Values (eighth — tenth or eleventh digits)

examples:

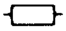
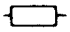
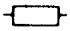
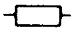
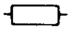
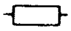
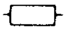
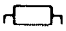
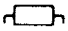
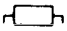
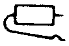
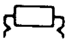
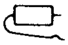
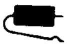
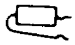
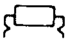
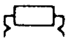
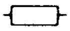
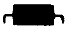
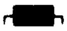
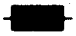
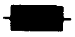
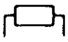
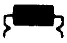
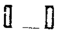
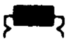
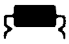
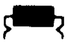
R47		0.47 Ω
4R7		4.7 Ω
470	47×10^0	47 Ω
471	47×10^1	470 Ω
472	47×10^2	4.7 kΩ
473	47×10^3	47 kΩ
474	47×10^4	470 kΩ
475	47×10^5	4.7 MΩ

QRV resistance shown by four digits:

4640	464×10^0	464 Ω
4641	464×10^1	4.64 kΩ
4642	464×10^2	46.4 kΩ

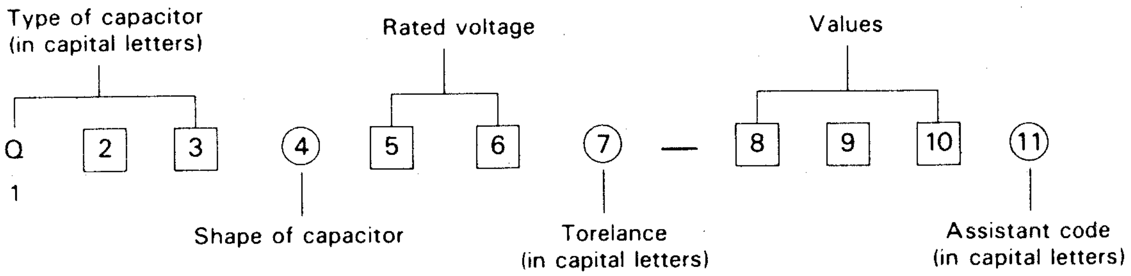
Shape of resistor (sixth digit)

Note: ■ indicates flame retardant resistor.

Type of resistor / Shape of resistor	C	D	F	G	H	M	S	V	W	X
1										
2										
3										
4										
5									(L) type	
6										
7			Lug (B) type							
8			Lug (A) type				 Chip			
9			Lug (C) type							

6.1.2 Fixed capacitor coding

Fixed capacitor part numbers are as follows.


Type of capacitor
(in capital letters)
Rated voltage
Values
Q
1
2
3
4
5
6
7
—
8
9
10
11
Shape of capacitor
Torelance
(in capital letters)
Assistant code
(in capital letters)

Ceramic capacitors

Type of capacitor (first – third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Mono-direction	Kink lead	Axial lead	Axial forming lead	Chip
QCC	Ceramic	1		4	5	
QCD	High capacitance					A
QCF	High capacitance	1,4	3			8,A
QCS	Temperature compensation	1	3	4	5	8,A
QCT	Temperature compensation	Special coding				8,A
QCV	Ceramic			1	3	
QCX	Ceramic			1	3	
QCY	High capacitance	1,4	3	6	7	8,A
QCZ	Special type	Special coding				
QCB	Ceramic			B	C	

Electrolytic capacitors

Type of capacitor (first-third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Tubular	Mono-direction	Anti-stress	Forming	Snap-in
QEB	Low leakage		4	5	6	
QEC	Low leakage		4,8,A	9,B	6,C	
QEE	Tantalum (normal)		4	5	6	
	Tantalum (small)		8			
QEF	Chip tantalum	8 (chip type)				
QEG	Low impedance		4			
QEK	Miniature type		4	5	6	
QEL	Small type		4	5	6	7
QEM	Small type		4,A	5	6	
QEN	Non-polar	2	4	5	6	
QEP	Non-polar (small)		4,A	5,B	6,C	
QER	Miniature type		4	5	6	
QET	Small type	2	4,A	5,B	6,C	7
QEU	Small type		4	5	6	
QEV	Small type		4		6	7
QEW	Normal	2	4	5	6	7

Paper film capacitors

Type of capacitor (first — third digits)		Shape of capacitor (fourth digit)				
		Tubular	Normal		Flame retardant	
Symbol	Characteristics		Mono-direction	Kink lead	Mono-direction	Kink lead
QFA	Metalized polypropylene				7	
QFE	Metalized mylar				5	
QFF	Film mica		4			
QFG	Polypropylene film		4	8		
QFH	Metalized mylar	2	4	3	5,7	6
QFJ	Mylar (special)		4			
QFK	Metalized mylar (small)				5	
QFM	Mylar	2	4	3,7	5	6
QFN	Mylar (small)		4	3		
QFP	Polypropylene		4	3,8		
QFS	Polystyrole	2	4	3		
QFV	Thin film		4	8		
QFZ	Special type	Special coding				

Rated voltage (fifth and sixth digits)

Fifth digit \ Sixth digit	A	B	C	D	E	F	G	H	J	K	V	W	X
0						3.15	4.0		6.3				
1	10		16	20	25		40	50	63	80	35		
2	100	125	160	200	250	315	400	500	630		350	450	600
3	1000	1250		2000				5000					

Tolerance (seventh digit)

A	$^{+100}_{-10}$ %	M	±20 %
F	±1 %	N	±30 %
G	±2 %	P	$^{+100}_{-0}$ %
H	$^{+50}_{-10}$ %	R	$^{+30}_{-10}$ %
J	±5 %	X	$^{+40}_{-20}$ %
K	±10 %	Z	$^{+80}_{-20}$ %

Values (eighth — tenth digits)

Example : Values are in picofarads

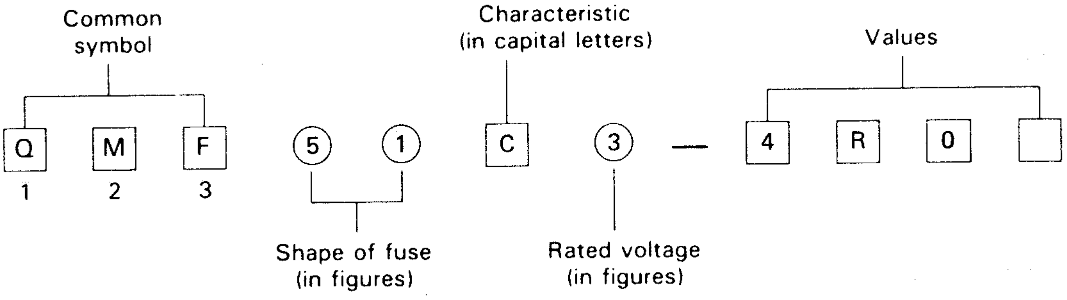
101	10×10^1 pF	100 pF
102	10×10^2 pF	1,000 pF (0.001 μF)
103	10×10^3 pF	10,000 pF (0.01 μF)
104	10×10^4 pF	100,000 pF (0.1 μF)
105	10×10^5 pF	1 μF
5R0		5.0 pF

Assistant code (eleventh digit)

G	Small size
Z	Lead taping
Y	Lead taping

6.1.3 Fuse coding

Standard fuse part numbers are as follows.


Common symbol
Characteristic (in capital letters)
Values
Q
M
F
5
1
C
3
—
4
R
0
1
2
3
Shape of fuse (in figures)
Rated voltage (in figures)

Shape of fuse
(fourth and fifth digits)

51	ϕ5.2 × 20 mm
60	ϕ6.4 × 30 mm
61	ϕ6.35 × 31.8 mm
63	ϕ6.4 × 30 mm with lead wires
66	ϕ6.35 × 31.8 mm with lead wires
00	Special type

Rated voltage
(seventh digit)

1	AC125 V
2	AC250 V
3	0.1 – 1 A : AC250 V 1.25 – 6.3 A : AC125 V

Values
(eighth-tenth or eleventh digits)
example:

R63	0.63 A
1R0	1.0 A
2R5	2.5 A
100	10 A
R315	0.315 A
1R25	1.25 A

Characteristics (sixth digit)

Symbol	Fusing Current	Fusing Time	Remarks
A	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
B	210 %	Within 30 min.	Regular fusible type (for SEMKO, Europe)
	275 %	0.05 – 2 sec.	
	400 %	0.01 – 0.3 sec.	
C	135 %	Within 1 hr.	Regular fusible type (for UL, Japan)
	200 %	Within 2 min.	
E	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
J	135 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
M	135 %	Within 1 hr.	Regular fusible type (for UL)
	200 %	Within 2 min.	
R	160 %	Within 1 hr.	Regular fusible type
	200 %	Within 2 min.	
S	160 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
	700 % – 2000 %	Within 0.01 sec.	
U	135 %	Within 1 hr.	Anti-rush type (for UL)
	200 %	Within 2 min.	
	800 % – 2000 %	Within 0.01 sec.	

****

****
*   10. MAIN BOARD ASSEMBLY <01>   *
****

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB10002A-03	MAIN PWB ASS'Y
	IC1	S-81250AG	IC
	IC2	M5236ML	IC
	IC3	BA6993F	IC
	IC101	BU3721K	IC
	IC102	M51799FP	IC
	IC103	M52410FP	IC
	IC104	NJM2904E	IC
	IC105	VC5026G	IC
	IC106	AFZ74A001X1	IC
	IC107	BU4011BF	IC
	IC301	BA7757K	IC
⚠	IC401	HD6305Z0F-CV05	IC
⚠		OR HD63705Z0F-CV05	IC
⚠		OR HD6305Z0F-CV06	IC
⚠	IC402	S8054HN	IC
	IC403	BU4584BF	IC
	IC404	M54543ASL-A	IC
	Q1	2SB1009(PQ)	TRANSISTOR
	Q2	DTA124EU	TRANSISTOR
	Q3	DTC144EU	TRANSISTOR
	Q4	2SJ146	TRANSISTOR
	Q5	2SJ146	TRANSISTOR
	Q103	2SC4081	TRANSISTOR
		OR 2SD1819	TRANSISTOR
	Q106	2SK665	TRANSISTOR
	Q110	DTC144EU	TRANSISTOR
	Q111	2SK665	TRANSISTOR
	Q112	DTC144EU	TRANSISTOR
	Q113	2SK665	TRANSISTOR
	Q114	FMG2	TRANSISTOR
	Q120	DTC144EU	TRANSISTOR
	Q121	DTC144EU	TRANSISTOR
	Q122	DTC144EU	TRANSISTOR
	Q125	2SB798	TRANSISTOR
	Q126	2SB798	TRANSISTOR
	Q127	2SB798	TRANSISTOR
	Q130	2SC4081	TRANSISTOR
		OR 2SD1819	TRANSISTOR
	Q301	FMG1	TRANSISTOR
	Q302	DTA124EU	TRANSISTOR
	Q303	FMW3	TRANSISTOR
	Q304	2SC4081(S)	TRANSISTOR
	Q305	2SC4081(S)	TRANSISTOR
	Q306	2SA1036K(QR)	TRANSISTOR
	Q307	2SA1036K(QR)	TRANSISTOR
	Q308	DTC144EU	TRANSISTOR
	Q309	FMG1	TRANSISTOR
	Q310	DTC144ES	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q401	2SK665	TRANSISTOR
	Q402	2SA1576	TRANSISTOR
	Q403	2SK665	TRANSISTOR
	Q404	FMC2	TRANSISTOR
	Q405	2SK665	TRANSISTOR
	Q406	2SK665	TRANSISTOR
	Q407	2SK665	TRANSISTOR
	Q408	2SK665	TRANSISTOR
	Q409	2SK665	TRANSISTOR
	Q413	2SK665	TRANSISTOR
	Q414	2SK665	TRANSISTOR
	Q415	2SK665	TRANSISTOR
	Q416	2SK665	TRANSISTOR
	Q417	2SA1576	TRANSISTOR
	Q418	2SK665	TRANSISTOR
	Q419	2SK665	TRANSISTOR
	D1	DAN202U	DIODE
	D2	FMN1	DIODE
	D101	MA141WA	DIODE
		OR DAP202U	DIODE
	D102	MA141WK	DIODE
		OR DAN202U	DIODE
	D103	MA704	DIODE
	D104	MA141WK	DIODE
		OR DAN202U	DIODE
	D108	MA3075H	ZENER DIODE
		OR RD7.5MB3	ZENER DIODE
	D301	DAP202U	DIODE
	D302	1SS133	DIODE
	D303	DAP209S	DIODE
	D401	IMN10	DIODE
	D402	DAP202U	DIODE
	D403	DAP202U	DIODE
	D405	1SS133	DIODE
	D407	1SS133	DIODE
	R1	QRSA08J-221YN	RESISTOR
	R3	QRSA08J-822YN	RESISTOR
	R4	NVP1301-102N	V RESISTOR,REG 8V ADJ
	R5	NRSA63J-104N	RESISTOR
	R6	NRSA63J-154N	RESISTOR
	R7	NRSA63J-104N	RESISTOR
	R8	NRSA63J-154N	RESISTOR
	R9	NRSA63J-104N	RESISTOR
	R11	NRSA63J-104N	RESISTOR
	R12	NRSA63J-104N	RESISTOR
	R13	NRSA63J-103N	RESISTOR
	R14	NRSA63J-103N	RESISTOR
	R15	NRSA63J-123N	RESISTOR
	R16	NRSA63J-0R0A	RESISTOR
	R17	NRSA63J-105N	RESISTOR
	R19	QRSA08J-102YN	RESISTOR
	R20	NRSA63J-824N	RESISTOR
	R21	NRSA63J-105N	RESISTOR
	R22	NRSA63J-824N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R101	YU40174	V RESISTOR,TRACKING VR
	R102	NRSA63J-102N	RESISTOR
	R103	NVP1301-103N	V RESISTOR,TRACKING PRESET
	R104	NRSA63J-102N	RESISTOR
	R105	NRSA63J-103N	RESISTOR
	R110	NRSA63J-102N	RESISTOR
	R112	NRSA63J-103N	RESISTOR
	R115	NRSA63J-102N	RESISTOR
	R116	NRSA63J-394N	RESISTOR
	R117	NRSA63J-103N	RESISTOR
	R118	NRSA63J-103N	RESISTOR
	R119	NRSA63J-471N	RESISTOR
	R120	NRSA63J-105N	RESISTOR
	R121	NRSA63J-222N	RESISTOR
	R126	NRSA63J-123N	RESISTOR
	R127	NRSA63J-183N	RESISTOR
	R128	NRSA63J-393N	RESISTOR
	R129	NRSA63J-105N	RESISTOR
	R131	NRSA63J-154N	RESISTOR
	R132	NRSA63J-184N	RESISTOR
	R133	NRSA63J-105N	RESISTOR
	R135	NRSA63J-154N	RESISTOR
	R136	NRSA63J-184N	RESISTOR
	R137	NRSA63J-102N	RESISTOR
	R138	NRSA63J-102N	RESISTOR
	R139	NRSA63J-473N	RESISTOR
	R140	NRSA63J-473N	RESISTOR
	R141	NRSA63J-473N	RESISTOR
	R142	NRSA63J-333N	RESISTOR
	R152	NRSA63J-273N	RESISTOR
	R154	NRSA63J-184N	RESISTOR
	R160	NRSA63J-561N	RESISTOR
	R161	QRSA08J-102YN	RESISTOR
	R162	QRSA08J-104YN	RESISTOR
	R163	NRSA63J-684N	RESISTOR
	R164	NVP1301-474N	V RESISTOR,EP/SP CTL DELAY
	R165	NRSA63J-104N	RESISTOR
	R166	NRSA63J-0R0A	RESISTOR
	R168	NRSA63J-823N	RESISTOR
	R170	NRSA63J-102N	RESISTOR
	R171	NRSA63J-102N	RESISTOR
	R172	NRSA63J-102N	RESISTOR
	R173	NRSA63J-102N	RESISTOR
	R174	NRSA63J-333N	RESISTOR
	R182	NRSA63J-473N	RESISTOR
	R183	NRSA63J-473N	RESISTOR
	R184	NRSA63J-333N	RESISTOR
	R185	NRSA63J-105N	RESISTOR
	R186	NRSA63J-103N	RESISTOR
	R187	NRSA63J-0R0A	RESISTOR
	R188	NRSA63J-472N	RESISTOR
	R189	NRSA63J-474N	RESISTOR
	R190	NRSA63J-103N	RESISTOR
	R202	NRSA63J-473N	RESISTOR
	R203	NRSA63J-473N	RESISTOR
	R204	NRSA63J-473N	RESISTOR
	R210	NRSA63J-683N	RESISTOR
	R211	NRSA63J-183N	RESISTOR
	R212	NRSA63J-103N	RESISTOR
	R213	NRSA63J-103N	RESISTOR
	R214	NRSA63J-103N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R215	NRSA63K-2R2N	RESISTOR
	R216	NRSA63K-2R2N	RESISTOR
	R217	NRSA63K-2R2N	RESISTOR
	R219	NRSA63J-560N	RESISTOR
	R220	NRSA63J-560N	RESISTOR
	R221	NRSA63J-333N	RESISTOR
	R222	NRSA63J-333N	RESISTOR
	R223	NRSA63J-103N	RESISTOR
	R301	NRSA63J-302N	RESISTOR
	R302	NRSA63J-623N	RESISTOR
	R303	NRSA63J-102N	RESISTOR
	R304	NRSA63J-102N	RESISTOR
	R305	NRSA63J-100N	RESISTOR
	R306	NRSA63J-222N	RESISTOR
	R307	NRSA63J-103N	RESISTOR
	R308	NRSA63J-392N	RESISTOR
	R309	NVP1301-103N	V RESISTOR,AUDIO PB LEVEL
	R311	NRSA63J-124N	RESISTOR
	R312	NRSA63J-121N	RESISTOR
	R313	NRSA63J-223N	RESISTOR
	R314	NRSA63J-470N	RESISTOR
	R315	NRSA63J-185N	RESISTOR
	R316	NRSA63J-822N	RESISTOR
	R317	NRSA63J-223N	RESISTOR
	R318	NRSA63J-223N	RESISTOR
	R319	NRSA63J-223N	RESISTOR
	R320	NRSA63J-151N	RESISTOR
	R321	NRSA63J-152N	RESISTOR
	R322	NRSA63J-221N	RESISTOR
	R323	NRSA63J-273N	RESISTOR
	R324	NRSA63J-102N	RESISTOR
	R325	NRSA63J-0R0A	RESISTOR
	R326	NRSA63J-123N	RESISTOR
	R327	NRSA63J-123N	RESISTOR
	R328	NRSA63J-123N	RESISTOR
	R329	NRSA63J-123N	RESISTOR
	R330	NRSA63J-562N	RESISTOR
	R331	NRSA63J-272N	RESISTOR
	R332	NVP1301-333N	V RESISTOR,AUDIO BIAS LEVEL
	R333	NRSA63J-683N	RESISTOR
	R334	NRSA63J-683N	RESISTOR
	R335	NRSA63J-100N	RESISTOR
	R336	NRSA63J-100N	RESISTOR
	R337	NRSA63J-0R0A	RESISTOR
	R338	NRSA63J-331N	RESISTOR
	R339	NRSA63J-472N	RESISTOR
	R340	NRSA63J-0R0A	RESISTOR
	R341	NRSA63J-0R0A	RESISTOR
	R342	NVP1301-683N	V RESISTOR,AUDIO BIAS LEVEL
	R345	NRSA63J-103N	RESISTOR
	R346	NRSA63J-103N	RESISTOR
	R347	NRSA63J-271N	RESISTOR
	R348	NRSA63J-562N	RESISTOR
	R349	QRD161J-223	RESISTOR
	R401	NRSA63J-153N	RESISTOR
	R402	NRSA63J-102N	RESISTOR
	R403	NRSA63J-103N	RESISTOR
	R404	NRSA63J-471N	RESISTOR
	R405	NRSA63J-105N	RESISTOR
	R406	NRSA63J-473N	RESISTOR
	R407	NRSA63J-473N	RESISTOR
	R408	NRSA63J-103N	RESISTOR
	R409	NRSA63J-473N	RESISTOR
	R410	NRSA63J-103N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R412	NRSA63J-153N	RESISTOR
	R413	NRSA63J-102N	RESISTOR
	R414	NRSA63J-103N	RESISTOR
	R416	NRSA63J-203N	RESISTOR
	R417	NRSA63J-103N	RESISTOR
	R418	NRSA63J-105N	RESISTOR
	R419	NRSA63J-203N	RESISTOR
	R420	NRSA63J-103N	RESISTOR
	R421	NRSA63J-102N	RESISTOR
	R422	NRSA63J-203N	RESISTOR
	R423	NRSA63J-203N	RESISTOR
	R424	NRSA63J-563N	RESISTOR
	R425	NRSA63J-103N	RESISTOR
	R426	NRSA63J-823N	RESISTOR
	R427	NRSA63J-333N	RESISTOR
	R428	NRSA63J-102N	RESISTOR
	R429	NRSA63J-102N	RESISTOR
	R430	NRSA63J-203N	RESISTOR
	R431	NRSA63J-184N	RESISTOR
	R432	NRSA63J-103N	RESISTOR
	R433	NRSA63J-203N	RESISTOR
	R434	NRSA63J-102N	RESISTOR
	R435	NRSA63J-103N	RESISTOR
	R436	NRSA63J-203N	RESISTOR
	R437	NRSA63J-203N	RESISTOR
	R439	NRSA63J-472N	RESISTOR
	R441	NRSA63J-203N	RESISTOR
	R443	YU40044-D823YN	RESISTOR
	R444	YU40044-D683YN	RESISTOR
	R445	NRSA63J-102N	RESISTOR
	R446	NRSA63J-102N	RESISTOR
	R447	NRSA63J-153N	RESISTOR
	R448	NRSA63J-102N	RESISTOR
	R449	NRSA63J-153N	RESISTOR
	R450	NRSA63J-102N	RESISTOR
	R451	NRSA63J-153N	RESISTOR
	R452	NRSA63J-0R0A	RESISTOR
	R455	NRSA63J-104N	RESISTOR
	R457	NRSA63J-104N	RESISTOR
	R460	NRSA63J-105N	RESISTOR
	R461	NRSA63J-102N	RESISTOR
	R462	NRSA63J-105N	RESISTOR
	R463	NRSA63J-102N	RESISTOR
	R469	NRSA63J-102N	RESISTOR
	R470	NRSA63J-102N	RESISTOR
	R471	NRSA63J-271N	RESISTOR
	R474	NRSA63J-153N	RESISTOR
	R475	NRSA63J-0R0A	RESISTOR
	R476	NRSA63J-0R0A	RESISTOR
	R477	NRSA63J-102N	RESISTOR
	R478	NRSA63J-102N	RESISTOR
	R479	NRSA63J-102N	RESISTOR
	R480	NRSA63J-102N	RESISTOR
	R481	NRSA63J-102N	RESISTOR
	R482	NRSA63J-473N	RESISTOR
	R483	NRSA63J-102N	RESISTOR
	R484	NRSA63J-102N	RESISTOR
	R485	NRSA63J-102N	RESISTOR
	R486	NRSA63J-223N	RESISTOR
	R487	NRSA63J-223N	RESISTOR
	R488	NRSA63J-223N	RESISTOR
	R489	NRSA63J-223N	RESISTOR
	R490	NRSA63J-103N	RESISTOR
	R491	NRSA63J-103N	RESISTOR
	R492	NRSA63J-103N	RESISTOR
	R493	NRSA63J-103N	RESISTOR
	R494	NRSA63J-102N	RESISTOR
	R495	NRSA63J-101N	RESISTOR
	R497	NRSA63J-102N	RESISTOR
	R501	NRSA63J-102N	RESISTOR
	R502	NRSA63J-102N	RESISTOR
	R503	NRSA63J-473N	RESISTOR
	R504	NRSA63J-152N	RESISTOR
	R505	NRSA63J-332N	RESISTOR
	R512	NRSA63J-473N	RESISTOR
	R513	NRSA63J-102N	RESISTOR
	R514	NRSA63J-103N	RESISTOR
	R515	NRSA63J-303N	RESISTOR
	R516	NRSA63J-105N	RESISTOR
	R517	NRSA63J-225N	RESISTOR
	R519	NRSA63J-102N	RESISTOR
	R522	QRSA08J-273YN	RESISTOR
	R523	NRSA63J-102N	RESISTOR
	RA101	YU40172-102N	RESISTOR ARRAY
	RA102	YU40172-104N	RESISTOR ARRAY
	RA103	YU40172-332N	RESISTOR ARRAY
	RA401	YU40172-102N	RESISTOR ARRAY
	RA402	YU40172-102N	RESISTOR ARRAY
	RA403	YU40172-102N	RESISTOR ARRAY
	RA404	YU40172-102N	RESISTOR ARRAY
	RA405	YU40172-102N	RESISTOR ARRAY
	RA406	YU40172-102N	RESISTOR ARRAY
	B101	NRSA63J-0R0A	RESISTOR
	C1	QEK41CM-476	E CAPACITOR
	C2	QEK41CM-476	E CAPACITOR
	C3	QED41CM-476	E CAPACITOR
	C4	QED41CM-476	E CAPACITOR
	C5	QED41AM-826	E CAPACITOR
	C6	QED41AM-826	E CAPACITOR
	C7	QED41AM-826	E CAPACITOR
	C8	QCY81EK-473ZL	CAPACITOR
	C9	QED41AM-826	E CAPACITOR
	C10	QCFA1EZ-104	CAPACITOR
	C15	QEF81EM-474	TANTAL CAPACITOR
	C16	QEE81DM-226	TANTAL CAPACITOR
	C101	QFZ0095-473	M CAPACITOR
	C103	QCYA1HK-392	CAPACITOR
	C104	NCT06CH-270A	CAPACITOR
	C105	NCT06CH-270A	CAPACITOR
	C106	QEF81AM-106	TANTAL CAPACITOR
	C107	QCYA1HK-103	CAPACITOR
	C108	QCYA1HK-562	CAPACITOR
	C109	QCYA1HK-103	CAPACITOR
	C110	QCSA1HJ-102	CAPACITOR
	C111	QEPA1CM-106	NP E CAPACITOR
	C112	QEPA1CM-106	NP E CAPACITOR
	C115	NCF31CZ-104A	CAPACITOR
	C116	NCB31EK-103A	CAPACITOR
	C121	QCYA1HK-222	CAPACITOR
	C122	QFZ0096-224	MM CAPACITOR
	C123	QCYA1HK-332	CAPACITOR
	C124	QCYA1EK-223	CAPACITOR
	C125	QCYA1EK-223	CAPACITOR
	C126	QCYA1EK-223	CAPACITOR
	C127	NCB31EK-103A	CAPACITOR
	C128	QCYA1HK-222	CAPACITOR
	C129	QFZ0095-104	MM CAPACITOR
	C130	QER41AM-106	E CAPACITOR
	C141	NCB31HK-102A	CAPACITOR
	C142	NCF31CZ-104A	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C143	NCT06CH-100A	CAPACITOR
	C144	NCF31CZ-104A	CAPACITOR
	C145	NCB31HK-471A	CAPACITOR
	C146	NCS31HJ-101A	CAPACITOR
	C147	NCB31HK-102A	CAPACITOR
	C148	QCFA1EZ-104	CAPACITOR
	C149	NCB31HK-562A	CAPACITOR
	C150	PU59758-105	CAPACITOR
	C151	PU59758-105	CAPACITOR
	C161	NCB31EK-103A	CAPACITOR
	C162	NCB31EK-103A	CAPACITOR
	C163	QCYA1EK-223	CAPACITOR
	C164	QCYA1EK-223	CAPACITOR
	C165	QCYA1EK-223	CAPACITOR
	C166	QER41AM-336	E CAPACITOR
	C167	QER41AM-336	E CAPACITOR
	C168	QER41AM-336	E CAPACITOR
	C175	QCYA1HK-103	CAPACITOR
	C301	QEF81VM-224XB	TANTAL CAPACITOR
	C302	QEF81VM-224WB	TANTAL CAPACITOR
	C303	QER41CM-106	E CAPACITOR
	C304	QEF81VM-104XB	TANTAL CAPACITOR
	C306	QER40JM-336	E CAPACITOR
	C307	QER41AM-226	E CAPACITOR
	C308	QCYA1EK-223	CAPACITOR
	C309	QCYA1HK-681	CAPACITOR
	C310	QCYA1HK-272	CAPACITOR
	C311	QER41HM-474	E CAPACITOR
	C312	QER40JM-336	E CAPACITOR
	C313	QEPA0JM-226	NP E CAPACITOR
	C314	QER41HM-105	E CAPACITOR
	C315	QER41CM-106	E CAPACITOR
	C316	QER41CM-106	E CAPACITOR
	C318	QER40JM-226	E CAPACITOR
	C319	QFJ41HJ-273	M.P.F. CAPACITOR
	C320	QER41HM-474	E CAPACITOR
	C322	QCYA1HK-471	CAPACITOR
	C323	NCB31HK-222A	CAPACITOR
	C324	NCB31HK-222A	CAPACITOR
	C325	QFZ9011-473	MM CAPACITOR
	C326	QER41AM-476	E CAPACITOR
	C330	QCYA1HK-472	CAPACITOR
	C331	NCB31HK-182A	CAPACITOR
	C332	NCB31HK-472A	CAPACITOR
	C334	NCB31HK-682A	CAPACITOR
	C335	QFN41HJ-472	CAPACITOR
	C401	QEF80JM-475	TANTAL CAPACITOR
	C402	NCS31HJ-330A	CAPACITOR
	C403	NCS31HJ-330A	CAPACITOR
	C404	QCFA1EZ-104	CAPACITOR
	C405	QEF80JM-475	TANTAL CAPACITOR
	C406	QCFA1EZ-104	CAPACITOR
	C407	QCFA1EZ-104	CAPACITOR
	C408	QCFA1EZ-333	CAPACITOR
	C409	NCB31EK-103A	CAPACITOR
	C411	QEE81CM-335	TANTAL CAPACITO
	C412	NCB31HK-102A	CAPACITOR
	L1	PU56181-470	COIL
	L2	PU55843-101K	COIL
	OR	PU59188-101K	COIL
	L302	PU56197-2	EQUALIZER

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	L303	YU40209	OSC COIL
	L304	PU59188-221K	COIL
	L401	YU40248-470KY	COIL
⚠	CF401	PU55812	RESONATOR
⚠	X1	PU58331	CRYSTAL RESONATOR
⚠	OR	PU58849	CRYSTAL RESONATOR
	DD1	YU40169-01-03	DC-DC CONVERTER
	RY1	YU40257	RELAY
	CL1	YU40245-01	WIRE CLAMP
	CL2	YU40245-03	WIRE CLAMP,X2
	CL3	YU40245-04	WIRE CLAMP
	HS1	YU40466	HEAT SINK
	SLD2	YU40467	INSULATOR
	SCR1	YQ40578	SCREW
	TP1	PU56278	TEST PIN
	TP2	PU56278	TEST PIN
	TP3	PU56278	TEST PIN
	TP4	PU54983	TEST PIN
	TP5	PU54983	TEST PIN
	TP101	PU56278	TEST POINT
	TP102	PU56278	TEST POINT
	TP103	PU56278	TEST POINT
	TP104	PU56278	TEST POINT
	TP105	PU56278	TEST POINT
	TP106	PU56278	TEST POINT
	TP107	PU56278	TEST POINT
	TP108	PU56278	TEST POINT
	TP109	PU56278	TEST POINT
	TP111	PU56278	TEST POINT
	TP302	PU56278	TEST POINT
	TP303	PU56278	TEST POINT
	TP304	PU56278	TEST POINT
	CN1	YU40101-12	CAP HOUSING,(BOARD TO BOARD)
	CN2	YU40108-6	FPC CONNECTOR
	CN3	YU40096-3	CAP HOUSING
	CN4	YU40096-2	CAP HOUSING
	CN5	YU40104-14	CAP HOUSING,(BOARD TO BOARD)
	CN6	YU40108-12	FPC CONNECTOR
	CN7	YU40096-6	CAP HOUSING
	CN8	YU40106-10	FPC CONNECTOR
	CN9	PU58655-6	CAP HOUSING
	CN11	YU40103-14X	B/B CN.WFR-D6.5
	CN12	YU40096-7	CAP HOUSING
	CN13	YU40096-4	CAP HOUSING
	CN14	YU40096-3	CAP HOUSING
	CN15	YU40096-9	CAP HOUSING
	CN16	YU40106-15	FPC CONNECTOR
	CN17	YU40102-20	CAP HOUSING,(BOARD TO BOARD)
	CN18	YU40102-10	CAP HOUSING,(BOARD TO BOARD)
	CN19	YU40102-8	CAP HOUSING,(BOARD TO BOARD)
⚠	CP1	ICP-F15	CIRCUIT PROTECTOR
⚠	CP2	ICP-F15	CIRCUIT PROTECTOR
⚠	CP3	ICP-F15	CIRCUIT PROTECTOR
⚠	CP4	ICP-F15	CIRCUIT PROTECTOR
⚠	CP5	ICP-F20	CIRCUIT PROTECTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
		-VOLUME BOARD ASSEMBLY-	
	PWBA	YB30018A	VOLUME BOARD ASSEMBLY
	Q107	DTA124EU	TRANSISTOR
	R108	NVP1301-474N	V RESISTOR,PB SW POINT
	R109	NRSA63J-124N	RESISTOR
	R122	NRSA63J-394N	RESISTOR
		-PRE AMP SUB BOARD ASSEMBLY-	
	PWBA	YB20036A	PREAMP SUB BOARD ASSY
	IC405	BA226F	IC
	Q420	FMG1	TRANSISTOR
	Q422	DTC144WK	TRANSISTOR
	R520	QRSA08J-104YN	RESISTOR
	R521	QRSA08J-103YN	RESISTOR
	C410	QCYA1HK-153	CAPACITOR
		-BUFFER RC BOARD ASSEMBLY-	
	PWBA	YB20049A	BUFFER RC BOARD ASSEMBLY
	R350	QRSA08K-4R7YN	RESISTOR
	C317	QCF81EZ-224	CAPACITOR
		– H. TRAP BOARD ASSEMBLY –	
	PWBA	YB20050A	H.TRAP BOARD ASSEMBLY
	TRAP301	YU40483	TRAP
	IC302	NJM2904E	IC
	R351	QRSA08J-0R0Y	RESISTOR
	R352	QRSA08J-0R0Y	RESISTOR
	R353	QRSA08J-0R0Y	RESISTOR
	R354	QRSA08J-0R0Y	RESISTOR
	R355	QRSA08J-0R0Y	RESISTOR
		– CAP BOARD ASSEMBLY –	
	PWBA	YB20042A-C	CAP BOARD ASSEMBLY
	C336	QCYA1HK-682	CAPACITOR
	C337	QCYA1HK-332	CAPACITOR

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*   11. Y/C BOARD ASSEMBLY <02>   *
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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB10004A-02-C	Y/C BOARD ASSEMBLY
	IC1	AN3212S	IC
	IC2	AN3323S	IC
	IC3	VC2031MP	IC
	IC4	BA7131F	IC
	IC5	BA7131F	IC
	IC6	BA7258AK	IC
	IC7	BA7131F	IC
	IC8	THE191A	IC
	IC9	M51648FP	IC
	IC10	MSM6846MS	IC
	IC12	MN3106S	IC
	IC13	TME234A	IC
⚠	IC14	H8D7046	IC
	IC15	H8D7047	IC
	IC16	H8D7048	IC
	Q2	2SA1576	TRANSISTOR
	Q3	DTC144EU	TRANSISTOR
	Q4	DTC144EU	TRANSISTOR
	Q5	2SC4081	TRANSISTOR
	Q6	FMU1	TRANSISTOR
	Q7	DTC144EU	TRANSISTOR
	Q9	2SC4081	TRANSISTOR
	Q12	2SC4081	TRANSISTOR
	Q13	2SA1576	TRANSISTOR
	Q14	2SC4081	TRANSISTOR
	Q15	DTC144EU	TRANSISTOR
	Q16	2SC4081	TRANSISTOR
	Q17	2SC4081	TRANSISTOR
	Q18	FMW1	TRANSISTOR
	Q19	2SA1576	TRANSISTOR
	Q21	FMU1	TRANSISTOR
	Q22	FMU1	TRANSISTOR
	Q26	DTC144EU	TRANSISTOR
	Q27	DTC144EU	TRANSISTOR
	Q28	DTC144EU	TRANSISTOR
	Q29	FMW1	TRANSISTOR
	Q30	DTC144EU	TRANSISTOR
	Q31	2SC4081	TRANSISTOR
	Q32	2SC4081	TRANSISTOR
	Q36	3SK179	FE TRANSISTOR
	Q37	2SC4081	TRANSISTOR
	Q38	DTC144EU	TRANSISTOR
	Q39	2SC4081	TRANSISTOR
	Q40	2SA1576	TRANSISTOR
	Q41	2SA933S(RS)	TRANSISTOR
	Q45	2SC4081	TRANSISTOR
	Q46	2SC4081	TRANSISTOR
	D1	DAN202U	DIODE
	D2	DAN202U	DIODE
	D3	DAN202U	DIODE
	D4	DAN202U	DIODE
	D5	DAN202U	DIODE
	D10	DAN202U	DIODE
	D14	DA204U	DIODE
	D20	DAN202U	DIODE
	D51	1SS133	DIODE
	D52	1SS133	DIODE
	R2	NRSA63J-332N	RESISTOR
	R3	NRSA63J-122N	RESISTOR
	R4	NRSA63J-222N	RESISTOR
	R5	NRSA63J-333N	RESISTOR
	R6	NRSA63J-102N	RESISTOR
	R7	NRSA63J-562N	RESISTOR
	R8	NRSA63J-182N	RESISTOR
	R9	NRSA63J-182N	RESISTOR
	R10	NRSA63J-473N	RESISTOR
	R11	NRSA63J-103N	RESISTOR
	R12	NRSA63J-273N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R13	NRSA63J-822N	RESISTOR
	R14	NRSA63J-273N	RESISTOR
	R15	NRSA63J-680N	RESISTOR
	R16	NRSA63J-152N	RESISTOR
	R17	NRSA63J-682N	RESISTOR
	R18	NRSA63J-103N	RESISTOR
	R19	NRSA63J-102N	RESISTOR
	R20	NRSA63J-332N	RESISTOR
	R21	NRSA63J-472N	RESISTOR
	R22	NRSA63J-471N	RESISTOR
	R23	NRSA63J-152N	RESISTOR
	R24	NRSA63J-152N	RESISTOR
	R25	NRSA63J-152N	RESISTOR
	R26	NRSA63J-152N	RESISTOR
	R27	NRSA63J-103N	RESISTOR
	R28	NRSA63J-562N	RESISTOR
	R29	NRSA63J-102N	RESISTOR
	R30	NRSA63J-122N	RESISTOR
	R31	NRSA63J-153N	RESISTOR
	R32	NRSA63J-122N	RESISTOR
	R33	NRSA63J-391N	RESISTOR
	R34	NRSA63J-102N	RESISTOR
	R35	NRSA63J-103N	RESISTOR
	R37	NRSA63G-102N	RESISTOR
	R38	NRSA63G-332N	RESISTOR
	R39	NRSA63G-152N	RESISTOR
	R40	NRSA63G-332N	RESISTOR
	R41	NRSA63G-152N	RESISTOR
	R42	NRSA63G-471N	RESISTOR
	R43	NRSA63G-102N	RESISTOR
	R44	NRSA63G-102N	RESISTOR
	R45	NRSA63G-823N	RESISTOR
	R46	NRSA63G-471N	RESISTOR
	R47	NRSA63G-102N	RESISTOR
	R48	NRSA63G-152N	RESISTOR
	R49	NRSA63G-332N	RESISTOR
	R50	NRSA63G-332N	RESISTOR
	R51	NRSA63J-102N	RESISTOR
	R52	NRSA63J-153N	RESISTOR
	R53	NRSA63J-333N	RESISTOR
	R54	NRSA63J-102N	RESISTOR
	R55	NRSA63J-272N	RESISTOR
	R56	NRSA63J-331N	RESISTOR
	R57	NRSA63J-0R0A	RESISTOR
	R58	NRSA63J-473N	RESISTOR
	R59	NRSA63J-103N	RESISTOR
	R60	NRSA63J-153N	RESISTOR
	R61	NRSA63J-222N	RESISTOR
	R62	NRSA63J-222N	RESISTOR
	R63	NRSA63J-222N	RESISTOR
	R64	NRSA63J-103N	RESISTOR
	R65	NRSA63J-222N	RESISTOR
	R66	NRSA63J-102N	RESISTOR
	R67	NRSA63J-563N	RESISTOR
	R68	NRSA63J-102N	RESISTOR
	R69	NRSA63J-102N	RESISTOR
	R70	NRSA63J-824N	RESISTOR
	R72	NRSA63J-101N	RESISTOR
	R73	NRSA63J-103N	RESISTOR
	R75	NRSA63J-102N	RESISTOR
	R76	NRSA63J-103N	RESISTOR
	R77	NRSA63J-271N	RESISTOR
	R78	NRSA63J-681N	RESISTOR
	R79	NRSA63J-102N	RESISTOR
	R80	NRSA63J-391N	RESISTOR
	R81	NRSA63J-683N	RESISTOR
	R82	NRSA63J-102N	RESISTOR
	R83	NRSA63J-223N	RESISTOR
	R85	NRSA63J-562N	RESISTOR
	R86	NRSA63J-223N	RESISTOR
	R87	NRSA63J-821N	RESISTOR
	R88	NRSA63J-221N	RESISTOR
	R89	NRSA63J-821N	RESISTOR
	R90	NRSA63J-102N	RESISTOR
	R91	NRSA63J-472N	RESISTOR
	R92	NRSA63J-390N	RESISTOR
	R93	NRSA63J-561N	RESISTOR
	R94	NRSA63J-332N	RESISTOR
	R95	NRSA63J-101N	RESISTOR
	R96	NRSA63J-103N	RESISTOR
	R99	NRSA63J-561N	RESISTOR
	R100	NRSA63J-122N	RESISTOR
	R101	NRSA63J-561N	RESISTOR
	R102	NRSA63J-391N	RESISTOR
	R105	NRSA63J-561N	RESISTOR
	R106	NRSA63J-102N	RESISTOR
	R107	NRSA63J-102N	RESISTOR
	R108	NRSA63J-393N	RESISTOR
	R109	NRSA63J-223N	RESISTOR
	R110	NRSA63J-102N	RESISTOR
	R111	NRSA63J-393N	RESISTOR
	R112	NRSA63J-223N	RESISTOR
	R113	NRSA63J-122N	RESISTOR
	R114	NRSA63J-333N	RESISTOR
	R115	NRSA63J-333N	RESISTOR
	R116	NRSA63J-0R0A	RESISTOR
	R117	NRSA63J-332N	RESISTOR
	R118	NRSA63J-683N	RESISTOR
	R119	NRSA63J-333N	RESISTOR
	R120	NRSA63J-333N	RESISTOR
	R121	NRSA63J-331N	RESISTOR
	R122	NRSA63J-182N	RESISTOR
	R123	NRSA63J-152N	RESISTOR
	R124	NRSA63J-222N	RESISTOR
	R126	NRSA63J-102N	RESISTOR
	R127	NRSA63J-104N	RESISTOR
	R128	NRSA63J-104N	RESISTOR
	R129	NRSA63J-105N	RESISTOR
	R130	NRSA63J-564N	RESISTOR
	R133	NRSA63J-331N	RESISTOR
	R134	NRSA63J-102N	RESISTOR
	R135	NRSA63J-561N	RESISTOR
	R136	NRSA63J-681N	RESISTOR
	R137	NRSA63J-682N	RESISTOR
	R138	NRSA63J-335N	RESISTOR
	R139	NRSA63J-471N	RESISTOR
	R140	NRSA63J-471N	RESISTOR
	R141	QRD161J-681	RESISTOR
	R142	QRD161J-472	RESISTOR
	R147	NRSA63J-122N	RESISTOR
	R148	NRSA63J-0R0A	RESISTOR
	R149	NRSA63J-103N	RESISTOR
	R151	NRSA63J-472N	RESISTOR
	R155	NRSA63J-101N	RESISTOR
	R156	NRSA63J-102N	RESISTOR
	R157	NRSA63J-102N	RESISTOR
	R158	NRSA63J-223N	RESISTOR
	R159	NRSA63J-471N	RESISTOR
	R160	NRSA63J-472N	RESISTOR
	R161	NRSA63J-104N	RESISTOR
	R162	NRSA63J-391N	RESISTOR
	R163	NRSA63J-823N	RESISTOR
	R164	NRSA63J-473N	RESISTOR
	R166	NRSA63J-473N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R167	NRSA63J-103N	RESISTOR
	R168	NRSA63J-473N	RESISTOR
	R169	NRSA63J-103N	RESISTOR
	R250	NRSA63J-0R0A	RESISTOR
	R251	QRD161J-122	RESISTOR
	R252	NRSA63J-102N	RESISTOR
	R253	QRSA08J-0R0Y	RESISTOR
	R301	NVP1301-102N	V RESISTOR,PB Y LEVEL
	R302	NVP1301-473N	V RESISTOR, S DARK CLIP
	R303	NVP1301-473N	V RESISTOR, S WHITE CLIP
	R304	NVP1301-222N	V RESISTOR,SUB EMPHA IN LEVEL
	R305	NVP1301-222N	V RESISTOR,EE Y LEVEL
	R306	NVP1301-473N	V RESISTOR,PB DEM LEVEL
	R307	NVP1301-222N	V RESISTOR,SUB EMPHA OUT LEVEL
	R308	NVP1301-103N	V RESISTOR,SUB EMPHA LIM BAL
	R309	NVP1301-473N	V RESISTOR,PB Y LEVEL
	R312	NVP1301-104N	V RESISTOR,DARK CLIP
	R313	NVP1301-104N	V RESISTOR,WHITE CLIP
	R316	NVP1301-102N	V RESISTOR,1H DELAY Y
	R317	NVP1301-102N	V RESISTOR,EE LEVEL
	R318	NVP1301-473N	V RESISTOR,AFC
	R319	NVP1301-102N	V RESISTOR,PB COLOR LEVEL
	R320	NVP1301-102N	V RESISTOR, SP REC COLOR LEVEL
	R321	NVP1301-102N	V RESISTOR, EP REC COLOR LEVEL
	R322	NVP1301-102N	V RESISTOR,PB BURST LEVEL
	R323	NVP1301-222N	V RESISTOR,EE COLOR LEVEL
	R324	NVP1301-222N	V RESISTOR,S VIDEO EQ
	R325	NVP1301-222N	V RESISTOR,VIDEO EQ
	R326	NVP1301-222N	V RESISTOR,S REC FM LEVEL
	R327	NVP1301-222N	V RESISTOR,REC FM LEVEL
	R328	NVP1301-153N	V RESISTOR,S CARRIER
	R329	NVP1301-103N	V RESISTOR,S DEVIATION
	R330	NVP1301-104N	V RESISTOR,COLOR LIM
	R331	NVP1301-473N	V RESISTOR,CARRIER
	R332	NVP1301-103N	V RESISTOR,DEVIATION
	R333	NVP1301-152N	V RESISTOR,12DB AMP
	C1	NCB31HK-222A	CAPACITOR
	C2	QEF81CM-105	TANTAL CAPACITOR
	C3	QEF81CM-335	E CAPACITOR
	C4	NCB31EK-103A	CAPACITOR
	C5	NCS31HJ-101A	CAPACITOR
	C6	NCB31EK-103A	CAPACITOR
	C7	QEF81CM-105	TANTAL CAPACITOR
	C8	NCB31HK-391A	CAPACITOR
	C9	NCS31HJ-121A	CAPACITOR
	C10	NCB31EK-103A	CAPACITOR
	C11	NCS31HJ-390A	CAPACITOR
	C12	NCB31EK-103A	CAPACITOR
	C13	ECEV0JV220R	E CAPACITOR
	C14	NCB31EK-103A	CAPACITOR
	C15	ECEV1HV2R2R	E CAPACITOR
	C16	NCB31EK-103A	CAPACITOR
	C17	NCS31HJ-221A	CAPACITOR
	C18	NCS31HJ-331A	CAPACITOR
	C20	NCB31EK-103A	CAPACITOR
	C21	NCB31EK-103A	CAPACITOR
	C22	QEF80GM-335	TANTAL CAPACITOR
	C23	NCB31EK-103A	CAPACITOR
	C24	NCS31HJ-220A	CAPACITOR
	C25	NCS31HJ-120A	CAPACITOR
	C26	NCS31HJ-120A	CAPACITOR
	C27	NCB31EK-103A	CAPACITOR
	C28	NCB31EK-103A	CAPACITOR
	C29	NCS31HJ-390A	CAPACITOR
	C30	NCB31EK-103A	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C31	NCB31EK-103A	CAPACITOR
	C32	NCS31HJ-120A	CAPACITOR
	C33	NCB31EK-103A	CAPACITOR
	C34	QCF11HP-102	CAPACITOR
	C35	QCYA1EK-223	CAPACITOR
	C36	NCB31EK-103A	CAPACITOR
	C37	QEE80JM-226	E CAPACITOR
	C38	ECEV1HV010R	E CAPACITOR
	C39	QEF81CM-105	TANTAL CAPACITOR
	C40	ECEV0JV220R	E CAPACITOR
	C41	NCB31HK-182A	CAPACITOR
	C42	NCF31CZ-104A	CAPACITOR
	C43	QEF81CM-105	TANTAL CAPACITOR
	C44	NCB31EK-103A	CAPACITOR
	C45	ECEV0JV220R	E CAPACITOR
	C46	ECEV0JV220R	E CAPACITOR
	C47	ECEV1EV4R7R	E CAPACITOR
	C48	QEF80JM-475	TANTAL CAPACITOR
	C49	ECEV1CV100R	E CAPACITOR
	C50	ECEV1CV100R	E CAPACITOR
	C51	QCTA1CH-271	CAPACITOR
	C52	QCTA1CH-271	CAPACITOR
	C53	NCT06CH-221A	CAPACITOR
	C54	NCT06CH-820A	CAPACITOR
	C55	NCB31EK-103A	CAPACITOR
	C56	ECEV0JV220R	E CAPACITOR
	C57	QCTA1CH-271	CAPACITOR
	C58	NCT06CH-820A	CAPACITOR
	C59	NCT06CH-221A	CAPACITOR
	C60	QCTA1CH-271	CAPACITOR
	C61	QCTA1CH-271	CAPACITOR
	C62	NCB31EK-103A	CAPACITOR
	C63	NCB31EK-103A	CAPACITOR
	C65	NCS31HJ-220A	CAPACITOR
	C66	NCS31HJ-330A	CAPACITOR
	C67	ECEV1CV100R	E CAPACITOR
	C68	QCSA1HJ-471	CAPACITOR
	C69	QCSA1HJ-220	CAPACITOR
	C71	ECEV1CV100R	E CAPACITOR
	C72	QEF80GM-335	TANTAL CAPACITOR
	C73	QER41VM-475	E CAPACITOR
	OR	QER41EM-475	E CAPACITOR
	C75	NCB31EK-103A	CAPACITOR
	C76	NCB31EK-103A	CAPACITOR
	C77	NCB31EK-103A	CAPACITOR
	C78	NCS31HJ-100A	CAPACITOR
	C79	NCS31HJ-101A	CAPACITOR
	C80	NCS31HJ-151A	CAPACITOR
	C81	QEF81VM-334	TANTAL CAPACITOR
	C83	QEF80JM-476	TANTAL CAPACITOR
	C84	NCB31EK-103A	CAPACITOR
	C85	NCB31EK-103A	CAPACITOR
	C86	ECEV1HV3R3R	E CAPACITOR
	C87	QEF80JM-475	TANTAL CAPACITOR
	C88	ECEV1EV4R7R	E CAPACITOR
	C89	QCYA1HK-682	CAPACITOR
	C90	QCYA1EK-223	CAPACITOR
	C92	QEF81CM-105	TANTAL CAPACITOR
	C94	NCS31HJ-9R0A	CAPACITOR
	C95	NCS31HJ-101A	CAPACITOR
	C96	NCS31HJ-101A	CAPACITOR
	C97	NCS31HJ-150A	CAPACITOR
	C98	NCB31EK-103A	CAPACITOR
	C99	NCB31EK-103A	CAPACITOR
	C100	ECEV0JV220R	E CAPACITOR
	C101	NCB31EK-103A	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C102	QCYA1EK-223	CAPACITOR
	C103	NCS31HJ-150A	CAPACITOR
	C104	NCS31HJ-390A	CAPACITOR
	C105	NCB31EK-103A	CAPACITOR
	C106	NCB31EK-103A	CAPACITOR
	C107	NCB31EK-103A	CAPACITOR
	C108	NCB31EK-103A	CAPACITOR
	C109	NCS31HJ-330A	CAPACITOR
	C110	NCB31EK-103A	CAPACITOR
	C111	QEF81CM-105	TANTAL CAPACITOR
	C112	QEF81CM-105	TANTAL CAPACITOR
	C114	NCB31EK-103A	CAPACITOR
	C115	NCB31EK-103A	CAPACITOR
	C116	NCB31EK-103A	CAPACITOR
	C117	NCB31EK-103A	CAPACITOR
	C118	ECEV0JV220R	E CAPACITOR
	C119	NCB31EK-103A	CAPACITOR
	C120	ECEV0JV220R	E CAPACITOR
	C121	QEF81CM-105	TANTAL CAPACITOR
	C122	QCYA1HK-103	CAPACITOR
	C123	ECEV1CV100R	E CAPACITOR
	C124	NCB31EK-103A	CAPACITOR
	C125	QER41AM-336	E CAPACITOR
	C126	QCYA1EK-223	CAPACITOR
	C128	ECEV1HV010R	CAPACITOR
	C129	NCS31HJ-121A	CAPACITOR
	C132	QEF81CM-105	CAPACITOR
	C134	QEF80GM-106	TANTAL CAPACITOR
	C135	NCB31EK-103A	CAPACITOR
	C136	ECEV0JV220R	E CAPACITOR
	C137	QCYA1EK-223	CAPACITOR
	C138	QCYA1EK-223	CAPACITOR
	C140	NCF31CZ-104A	CAPACITOR
	C141	ECEV1CV100R	E CAPACITOR
	C142	QEF81AM-475	E CAPACITOR
	C143	QEKA05M-477	E CAPACITOR
	C144	QEKA05M-477	E CAPACITOR
	C145	QEKA05M-477	E CAPACITOR
	C146	QEKA05M-477	E CAPACITOR
	C147	QEKA05M-477	E CAPACITOR
	C149	ECEV0JV220R	E CAPACITOR
	C150	NCB31EK-103A	CAPACITOR
	C151	QEF81AM-475	E CAPACITOR
	C152	NCB31EK-103A	CAPACITOR
	C153	NCB31EK-103A	CAPACITOR
	C154	ECEV0JV220R	E CAPACITOR
	C155	ECEV0JV220R	E CAPACITOR
	C156	QEF81CM-105	TANTAL CAPACITOR
	C163	NCS31HJ-101A	CAPACITOR
	C164	NCS31HJ-180A	CAPACITOR
	C166	NCB31EK-103A	CAPACITOR
	C167	NCS31HJ-180A	CAPACITOR
	C168	NCS31HJ-6R0A	CAPACITOR
	C169	NCS31HJ-470A	CAPACITOR
	C176	NCB31EK-103A	CAPACITOR
	C192	NCB31EK-103A	CAPACITOR
	C193	ECEV0JV220R	E CAPACITOR
	C194	NRSA63J-0R0A	CAPACITOR
	C195	NCS31HJ-151A	CAPACITOR
	C196	NCS31HJ-271A	CAPACITOR
	C199	QCS11HJ-101	CAPACITOR
	C200	QEF80JM-475	TANTAL CAPACITOR
	C201	QEF81CM-105	TANTAL CAPACITOR
	C202	PU56274B-200	TRIMMER CAPACITOR,VCO

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	OR	PU56274-200	TRIMMER CAPACITOR
	C203	NCS31HJ-390A	CAPACITOR
	C204	NCB31EK-103A	CAPACITOR
	C205	NCB31EK-103A	CAPACITOR
	C206	ECEV0JV220R	E CAPACITOR
	C207	ECEV1CV100R	E CAPACITOR
	C208	NCB31EK-103A	CAPACITOR
	C209	NCS31HJ-220A	CAPACITOR
	C210	QEF80JM-225	TANTAL CAPACITOR
	C211	NCS31HJ-390A	CAPACITOR
	C212	QCS11HJ-121	CAPACITOR
	L1	YU40248-470KY	COIL
	L2	YU40248-470KY	COIL
	L4	YU40249-560JY	COIL
	L5	YU40248-470KY	COIL
	L6	YU40248-470KY	COIL
	L7	YU40248-470KY	COIL
	L8	YU40249-560JY	COIL
	L9	YU40249-100JY	COIL
	L12	YU40248-470KY	COIL
	L15	PU58201-680J	COIL
	L16	YU40249-470JY	COIL
	OR	PU58201-470J	COIL
	L17	YU40249-390JY	COIL
	OR	PU58201-390J	COIL
	L24	YU40248-470KY	COIL
	L25	PU59152-101J	COIL
	L27	YU40249-100JY	COIL
	L28	YU40249-220JY	COIL
	L38	YU40249-221KY	COIL
	L39	YU40249-100JY	COIL
	L40	YU40249-101KY	COIL
	OR	PU58201-101K	COIL
	L41	YU40249-100JY	COIL
	L42	YU40248-470KY	COIL
	L43	YU40248-470KY	COIL
	L44	YU40249-101KY	COIL
	OR	PU58201-101J	COIL
	L45	YU40248-470KY	COIL
	L46	YU40249-101KY	COIL
	OR	PU58201-101K	COIL
	L47	YU40248-470KY	COIL
	L48	YU40248-470KY	COIL
	L50	PU59152-390J	COIL
			COIL
	L120	QRS188J-0R0Y	RESISTOR
	L121	QRS188J-0R0Y	RESISTOR
	EQ2	PU59031	FH TRAP COIL
	EQ3	YU40226	EQUALIZER
	LPF1	YU40224-2	LOW PASS FILTER
	LPF2	YU40225	LOW PASS FILTER
	LPF3	YU40227	EQUALIZER
	LPF4	YU40230	LOW PASS FILTER
	LPF5	YU40231	LOW PASS FILTER
	BPF1	PU58633	BAND PASS FILTER
	BPF2	YU40229	BAND PASS FILTER
	HPF1	PU58632	HIGH PASS FILTER
	DL1	YU40243	COMB FILTER

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	X1	PU53612-2	CRYSTAL RESONATOR
	SW1	YU40236	SLIDE SWITCH
	CL1	YU40245-04	WIRE CLAMP
	SPC1	YQ40433-1-1	DUST SPACER
	TP1	PU56278	TEST POINT
	TP2	PU56278	TEST POINT
	TP3	PU56278	TEST POINT
	TP4	PU56278	TEST POINT
	TP5	PU56278	TEST POINT
	TP6	PU56278	TEST POINT
	TP7	PU56278	TEST POINT
	TP8	PU56278	TEST POINT
	TP9	PU56278	TEST POINT
	TP10	PU56278	TEST POINT
	TP11	PU56278	TEST POINT
	TP12	PU56278	TEST POINT
	TP13	PU56278	TEST POINT
	TP14	PU56278	TEST POINT
	TP15	PU56278	TEST POINT
	TP16	PU56278	TEST POINT
	TP17	PU56278	TEST POINT
	TP18	PU56278	TEST POINT
	TP19	PU56278	TEST POINT
	TP20	PU56278	TEST POINT
	TP21	PU56278	TEST POINT
	TP22	PU56278	TEST POINT
	TP23	PU56278	TEST POINT
	CN8	YU40096-2	W/B CN. WFR R/A
	CN17	YU40105-20	B/B HOUSING-DS
	CN18	YU40105-10	B/B HOUSING-DS
	CN19	YU40105-8	B/B HOUSING-DS

– DI BOARD ASSEMBLY –

	PWBA	YB20040A1	DI BOARD ASSEMBLY
	D26	DAP202K	DIODE
	D28	DAN202K	DIODE

– TRAP BOARD ASSEMBLY –

	PWBA	YB20040A2	TRAP BOARD ASSEMBLY
	C197	QCYA1HK-333	CAPACITOR
	C198	QCYA1HK-333	CAPACITOR
	L33	PU55843-102K	COIL
	OR	PU57620-102K	COIL
	L34	YU40249-331JY	COIL

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12. D.MDA BOARD ASSEMBLY <03>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20021A-01-C	DRUM MDA BOARD ASSY
	IC251	BA6452F	IC
	D251	MA141WA	DIODE
	R251	NRSA63J-102N	RESISTOR
	R252	NRSA63J-104N	RESISTOR
	R253	NRSA63J-153N	RESISTOR
	R254	NRSA63J-222N	RESISTOR
	R255	NRSA63J-101N	RESISTOR
	R256	NRSA63K-2R2N	RESISTOR
	R257	NRSA63K-2R2N	RESISTOR
	R258	NRSA63K-2R2N	RESISTOR
	R259	QRG125J-R68AR	MF RESISTOR
	R260	NRSA63J-104N	RESISTOR
	R261	NRSA63J-0R0A	RESISTOR
	C251	QCY81EK-104	CAPACITOR
	C252	NCB31HK-471A	CAPACITOR
	C253	QCY81CK-224	CAPACITOR
	C254	QCFA1EZ-104	CAPACITOR
	C255	QER41CM-106ZE	E CAPACITOR
	C256	QCYA1EK-223	CAPACITOR
	C257	QER41CM-106ZE	E CAPACITOR
	C258	QER41CM-106ZE	E CAPACITOR
	C259	QER41CM-106ZE	E CAPACITOR
	C260	QCY81EK-104	CAPACITOR
	C261	QER41CM-106ZE	E CAPACITOR
	SW251	YU40177	CASSETTE LOCK SW
	CN251	YU40096-2R	CAP HOUSING
	CN252	YU40107-16	FPC CONNECTOR
	CN253	YU40096-2Y	CAP HOUSING
	CN254	YU40105-14	CAP HOUSING,(BOARD TO BOARD)

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13. MIC JACK BOARD ASSEMBLY <05>

	PWBA	YB20026B1	MIC JACK BOARD ASSY
	R1	QRS188J-100YN	RESISTOR
	J1	PU59711	MIC JACK
	CN1	YU40096-3	CAP HOUSING
	CN2	YU40095-2	CAP HOUSING

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15. JACK BOARD ASSEMBLY <06>

	PWBA	YB20026A2	JACK BOARD ASSY
	D1	RD5.6EB2	ZENER DIODE
	D2	1SS133	DIODE
	R1	QRD161J-750	RESISTOR
	R2	QRD161J-750	RESISTOR
	R3	QRD161J-750	RESISTOR
	R4	QRD161J-750	RESISTOR
	R5	QRD161J-101	RESISTOR
	R6	QRD161J-102	RESISTOR
	JA1	YU40223	JACK BOX
	FW1	YU40206	FLAT WIRE1
	FW2	YU40207	FLAT WIRE2

16. TRIGGER BOARD ASSEMBLY <07>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20026A3	TRIGER BOARD ASSY
	D1	ERA81-004	DIODE
	R1	QRD161J-683	RESISTOR
	SW1	PU59843	TRIGGER SW
	SW2	YU40171	SWITCH(SLIDE)
	SPC1	YQ40478	SPACER
	WR1	YU40417	LUG WIRE ASS'Y
	CN1	YU40096-3	CAP HOUSING
	CN2	YU40096-4	CAP HOUSING
	CN3	YU40096-2	CAP HOUSING
⚠	F1	QMF51C3-4R0	FUSE,NOT INCL.TRIG BOARD ASSY
⚠	F CLIP	YU40170	FUSE CLIP,X2

17. VIDEO-1 BOARD ASSEMBLY <21>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20016D-C	VIDEO-1 BOARD ASSEMBLY
	IC2	CP1088G	IC
	IC3	MC8089A	IC
	IC4	UPC2370GH	IC
	IC5	MSM6830	IC
	IC9	THE175A	IC
	Q1	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q2	2SD1819(RS)	TRANSISTOR
	Q3	2SC4098(PQ)	TRANSISTOR
		OR 2SC3936(BC)	TRANSISTOR
	Q4	2SB1218(RS)	TRANSISTOR
	Q8	2SD1819(RS)	TRANSISTOR
	Q12	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q13	2SA1532(BC)	TRANSISTOR
		OR 2SA1576(QR)	TRANSISTOR
	Q14	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q15	2SA1532(BC)	TRANSISTOR
		OR 2SA1576(QR)	TRANSISTOR
	Q16	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q17	2SC3936(BC)	TRANSISTOR
		OR 2SC4098(PQ)	TRANSISTOR
	Q18	2SC4098(PQ)	TRANSISTOR
		OR 2SC3936(BC)	TRANSISTOR
	Q29	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q30	2SC3936(BC)	TRANSISTOR
		OR 2SC4098(PQ)	TRANSISTOR
	Q31	2SC4098(PQ)	TRANSISTOR
		OR 2SC3936(BC)	TRANSISTOR
	Q32	2SA1532(BC)	TRANSISTOR
		OR 2SA1576(QR)	TRANSISTOR
	Q33	2SC3931(CD)	TRANSISTOR
	Q34	2SA1576(QR)	TRANSISTOR
		OR 2SA1532(BC)	TRANSISTOR
	Q35	2SA1532(BC)	TRANSISTOR
		OR 2SA1576(QR)	TRANSISTOR
	Q40	2SC4098(PQ)	TRANSISTOR
		OR 2SC3936(BC)	TRANSISTOR
	D1	MA143	DIODE
	D2	MA141WA	DIODE
	R2	NRSA63J-152N	RESISTOR
	R3	NRSA63J-331N	RESISTOR
	R4	NRSA63J-152N	RESISTOR
	R5	NRSA63J-105N	RESISTOR
	R6	NRSA63J-302N	RESISTOR
	R7	NRSA63J-102N	RESISTOR
	R8	NRSA63J-103N	RESISTOR
	R9	NRSA63J-102N	RESISTOR
	R10	NRSA63J-102N	RESISTOR
	R11	NRSA63J-393N	RESISTOR
	R12	NRSA63J-683N	RESISTOR
	R13	NRSA63J-103N	RESISTOR
	R14	NRSA63J-563N	RESISTOR
	R15	NRSA63J-124N	RESISTOR
	R16	NRSA63J-203N	RESISTOR
	R17	NRSA63J-821N	RESISTOR
	R21	NRSA63J-303N	RESISTOR
	R22	NRSA63J-303N	RESISTOR
	R23	NRSA63J-332N	RESISTOR
	R24	NRSA63J-220N	RESISTOR
	R25	NRSA63J-104N	RESISTOR
	R26	NRSA63J-472N	RESISTOR
	R27	NRSA63J-104N	RESISTOR
	R28	NRSA63J-912N	RESISTOR
	R29	NVP1301-104N	V RESISTOR, BLOOMING
	R30	NRSA63J-0R0A	RESISTOR
	R33	NRSA63J-184N	RESISTOR
	R36	NRSA63J-122N	RESISTOR
	R40	NRSA63J-473N	RESISTOR
	R41	NVP1301-223N	V RESISTOR, AGC
	R42	NRSA63J-223N	RESISTOR
	R43	NRSA63J-333N	RESISTOR
	R44	NRSA63J-123N	RESISTOR
	R45	NRSA63J-103N	RESISTOR
	R46	NRSA63J-473N	RESISTOR
	R47	NRSA63J-333N	RESISTOR
	R48	NRSA63J-102N	RESISTOR
	R49	NVP1301-103N	V RESISTOR, B SEPA
	R50	NRSA63J-102N	RESISTOR
	R52	NVP1301-103N	V RESISTOR, R SEPA
	R54	NVP1301-103N	V RESISTOR, R LEVEL
	R55	NRSA63J-102N	RESISTOR
	R56	NVP1301-103N	V RESISTOR, B LEVEL
	R57	NRSA63J-102N	RESISTOR
	R58	NVP1301-103N	V RESISTOR, YL LEVEL
	R60	NRSA63J-562N	RESISTOR
	R61	NRSA63J-222N	RESISTOR
	R62	NRSA63J-102N	RESISTOR
	R63	NRSA63J-102N	RESISTOR
	R64	NRSA63J-102N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R65	NRSA63J-102N	RESISTOR
	R66	NVP1301-103N	V RESISTOR, YH SET UP
	R67	NVP1301-103N	V RESISTOR, YL SET UP
	R68	NVP1301-103N	V RESISTOR, R SET UP
	R69	NRSA63J-183N	RESISTOR
	R70	NRSA63J-243N	RESISTOR
	R71	NRSA63G-273N	RESISTOR
	R72	NRSA63J-273N	RESISTOR
	R73	NRSA63J-103N	RESISTOR
	R74	NRSA63J-123N	RESISTOR
	R75	NRSA63J-332N	RESISTOR
	R76	NRSA63J-102N	RESISTOR
	R77	NRSA63J-102N	RESISTOR
	R78	NRSA63J-562N	RESISTOR
	R79	NRSA63J-103N	RESISTOR
	R80	NRSA63J-102N	RESISTOR
	R81	NRSA63J-102N	RESISTOR
	R83	NVP1301-102N	V RESISTOR, YH BALANCE
	R84	NRSA63J-102N	RESISTOR
	R85	NRSA63J-0R0A	RESISTOR
	R86	NRSA63J-103N	RESISTOR
	R87	NRSA63J-103N	RESISTOR
	R90	NRSA63J-105N	RESISTOR
	R107	NRSA63J-102N	RESISTOR
	R108	NRSA63J-102N	RESISTOR
	R109	QRD161J-332	RESISTOR
	R110	NVP1301-103N	V RESISTOR, B SET UP
	R111	NRSA63J-102N	RESISTOR
	R116	NRSA63J-472N	RESISTOR
	R117	NRSA63J-102N	RESISTOR
	R118	NRSA63J-102N	RESISTOR
	R119	NVP1301-222N	V RESISTOR
	R120	NRSA63J-681N	RESISTOR
	R121	NRSA63J-331N	RESISTOR
	R122	NRSA63J-331N	RESISTOR
	R123	NVP1301-222N	V RESISTOR, V EDGE 1H
	R124	NRSA63J-102N	RESISTOR
	R125	NRSA63J-751N	RESISTOR
	R126	NRSA63J-222N	RESISTOR
	R127	NRSA63J-122N	RESISTOR
	R128	NRSA63J-271N	RESISTOR
	R141	NRSA63J-105N	RESISTOR
	R143	NRSA63J-102N	RESISTOR
	R144	NVP1301-103N	V RESISTOR, B-Y GAIN
	R145	NRSA63J-102N	RESISTOR
	R146	NRSA63J-102N	RESISTOR
	R147	NVP1301-103N	V RESISTOR, YH GAIN
	R148	NRSA63J-102N	RESISTOR
	R149	NRSA63J-102N	RESISTOR
	R150	NRSA63J-0R0A	RESISTOR
	C1	NCT07CH-220A	CAPACITOR
	C2	NCT07CH-220A	CAPACITOR
	C3	NCB31EK-103A	CAPACITOR
	C4	ECEV0JV220R	E CAPACITOR
	C5	PU56247B-200	TRIMMER CAPACITOR,CLOCK OSC
		OR PU59867-200X	TRIMMER CAPACITOR
	C7	NCT06CH-5R0A	CAPACITOR
	C8	NCB31EK-103A	CAPACITOR
	C9	NCB31EK-103A	CAPACITOR
	C10	ECEV0JV101P	E CAPACITOR
	C11	NCT07CH-100A	CAPACITOR
	C13	NCT07CH-220A	CAPACITOR
	C14	NCB31EK-103A	CAPACITOR
	C15	ECEV0JV220R	E CAPACITOR
	C16	NCB31EK-103A	CAPACITOR
	C17	ECEV0JV220R	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C18	NCB31EK-103A	CAPACITOR
	C19	ECEV1CV100R	E CAPACITOR
	C20	NCB31EK-103A	CAPACITOR
	C21	ECEV1CV100R	E CAPACITOR
	C22	NCT07CH-150A	CAPACITOR
	C23	NCT07CH-330A	CAPACITOR
	C24	NCT07CH-330A	CAPACITOR
	C25	NCT07CH-330A	CAPACITOR
	C26	NCB31EK-103A	CAPACITOR
	C27	ECEV1CV470P	E CAPACITOR
	C28	NCB31EK-103A	CAPACITOR
	C29	NCB31EK-103A	CAPACITOR
	C30	NCB31EK-103A	CAPACITOR
	C31	ECEV1CV470P	E CAPACITOR
	C32	NCB31EK-103A	CAPACITOR
	C33	ECEV1CV100R	E CAPACITOR
	C34	NCB31EK-103A	CAPACITOR
	C35	NCB31EK-103A	CAPACITOR
	C36	NCB31EK-103A	CAPACITOR
	C37	ECEV1EV4R7R	E CAPACITOR
	C38	NCB31EK-103A	CAPACITOR
	C39	NCB31EK-103A	CAPACITOR
	C40	ECEV1EV4R7R	E CAPACITOR
	C41	NCB31EK-103A	CAPACITOR
	C42	ECEV0JV220R	E CAPACITOR
	C43	YU40265-3	E CAPACITOR
	C44	ECEV0JV220R	E CAPACITOR
	C45	QEF81CM-105	TANTAL CAPACITOR
	C48	QEE81AM-226	TANTAL CAPACITOR
	C49	YU40265-3	E CAPACITOR
	C50	QEE80JM-226	TANTAL CAPACITOR
	C52	ECEV0JV220R	E CAPACITOR
	C53	QEF81CM-105	TANTAL CAPACITOR
	C54	PU59758-105	CAPACITOR
		OR QCF81CZ-105	CAPACITOR
	C55	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C56	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C57	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C58	PU59758-105	CAPACITOR
		OR QCF81CZ-105	CAPACITOR
	C59	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C60	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C61	NRC21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C62	PU59758-105	CAPACITOR
		OR QCF81CZ-105	CAPACITOR
	C63	QCY81EK-473	CAPACITOR
	C64	QCY81EK-473	CAPACITOR
	C65	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C66	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C67	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C68	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C69	ECEV1CV100R	E CAPACITOR
	C71	QEE81AM-226	E CAPACITOR
	C72	NCB31EK-103A	CAPACITOR
	C73	ECEV1CV100R	E CAPACITOR
	C74	NCB31EK-103A	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C75	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C76	NCB31EK-103A	CAPACITOR
	C77	ECEV0JV220R	E CAPACITOR
	C78	NCT07CH-150A	CAPACITOR
	C80	YU40265-1	E CAPACITOR
	C81	NCB31EK-103A	CAPACITOR
	C91	QEF81AM-475	TANTAL CAPACITOR
	C92	QEF81VM-334	TANTAL CAPACITOR
	C94	QEF81VM-334	TANTAL CAPACITOR
	C95	QEF81AM-475	TANTAL CAPACITOR
	C96	NCB31EK-103A	CAPACITOR
	C97	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C98	NCB31EK-103A	CAPACITOR
	C99	QEF81AM-475	TANTAL CAPACITOR
	C100	NCB31EK-103A	CAPACITOR
	C101	ECEV0JV220R	E CAPACITOR
	C102	NCB31EK-103A	CAPACITOR
	C103	ECEV1CV100R	E CAPACITOR
	C104	NCB31EK-103A	CAPACITOR
	C121	ECEV1EV4R7R	E CAPACITOR
	L101	YU40248-220KY	COIL
	L102	YU40248-220KY	COIL
	L103	PU58201-120K	COIL
	L105	YU40248-220KY	COIL
	L106	YU40248-220KY	COIL
	L107	PU58201-120K	COIL
	L108	YU40248-220KY	COIL
	L111	YU40248-220KY	COIL
	L112	YU40248-220KY	COIL
	L113	PU58201-330K	COIL
	L115	YU40248-220K	COIL
	L116	YU40248-220K	COIL
	L117	YU40248-220KY	COIL
	L121	PU59115	FERRATE BEADS
	L122	PU59115	FERRATE BEADS
	L123	PU59115	FERRATE BEADS
	L124	PU59115	FERRATE BEADS
	L125	PU59115	FERRATE BEADS
	L126	PU59115	FERRATE BEADS
	EQ101	YU40081	EQUALIZER
	LPF103	YU40075-2	LOW PASS FILTER
	LPF104	YU40076-3	LOW PASS FILTER
	LPF105	YU40077-2	LOW PASS FILTER
	LPF106	YU40076-3	LOW PASS FILTER
⚠	X101	YU40178B	CRYSTAL RESONATOR
	SPC1	PU59915-105	SPACER
	SLD1	YU40341	INSULATOR
	TP101	PU59111-2	TEST PIN
	TP102	PU59111-2	TEST PIN
	TP103	PU59111-2	TEST PIN
	TP104	PU59111-2	TEST PIN
	TP105	PU59111-2	TEST PIN
	TP106	PU59111-2	TEST PIN
	TP107	PU59111-2	TEST PIN
	TP108	PU59111-2	TEST PIN
	TP109	PU59111-2	TEST PIN
	TP110	PU59111-2	TEST PIN
	TP113	PU59111-2	TEST PIN
	TP114	PU59111-2	TEST PIN
	TP115	PU59111-2	TEST PIN
	TP116	PU59111-2	TEST PIN
	CN101	YU40101-12	BOARD TO BOARD
	CN102	YU40101-10	BOARD TO BOARD
	CN103	YU40101-20	BOARD TO BOARD
	CN105	YU40251-9	BOARD TO BOARD
	CN106	YU40251-13	BOARD TO BOARD

– RB BOARD ASSEMBLY –

REF NO.	PART NO.	PART NAME, DESCRIPTION
PWBA	YB20053A-C	RB BOARD ASSY
D3	MA141WA	DIODE
R18	NVP1301-103N	V RESISTOR, OB LEVEL
R20	QRSA08J-332YN	RESISTOR

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18. VIDEO-2 BOARD ASSEMBLY <22>

REF NO.	PART NO.	PART NAME, DESCRIPTION
PWBA	YB20017D-C	VIDEO-2 BOARD ASSEMBLY
IC201	UPC2371GH	IC
IC202	MSM6984MS	IC
IC203	MSM6984MS	IC
Q201	2SC3936(BC)	TRANSISTOR
	OR 2SC4098(PQ)	TRANSISTOR
Q203	2SC3936(BC)	TRANSISTOR
	OR 2SC4098(PQ)	TRANSISTOR
Q204	2SA1576(QR)	TRANSISTOR
	OR 2SAI532(BC)	TRANSISTOR
Q205	2SC3936(BC)	TRANSISTOR
	OR 2SC4098(PQ)	TRANSISTOR
Q206	2SA1576(QR)	TRANSISTOR
	OR 2SA1532(BC)	TRANSISTOR
Q208	2SA1576(QR)	TRANSISTOR
	OR 2SA1532(BC)	TRANSISTOR
Q209	2SC3936(BC)	TRANSISTOR
	OR 2SC4098(PQ)	TRANSISTOR
R201	NRSA63J-333N	RESISTOR
R202	NRSA63J-222N	RESISTOR
R203	NRSA63J-822N	RESISTOR
R204	NRSA63J-333N	RESISTOR
R207	NRSA63J-333N	RESISTOR
R208	NRSA63J-223N	RESISTOR
R209	NRSA63J-183N	RESISTOR
R210	NRSA63J-333N	RESISTOR
R212	NRSA63J-333N	RESISTOR
R214	NRSA63J-103N	RESISTOR
R215	NRSA63J-333N	RESISTOR
R216	NRSA63J-123N	RESISTOR
R217	NRSA63J-102N	RESISTOR
R218	NRSA63J-102N	RESISTOR
R219	NRSA63J-102N	RESISTOR
R220	NRSA63J-102N	RESISTOR
R221	NRSA63J-273N	RESISTOR
R222	NRSA63J-273N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R223	NRSA63J-333N	RESISTOR
	R224	NRSA63J-273N	RESISTOR
	R225	NRSA63J-102N	RESISTOR
	R226	NRSA63J-102N	RESISTOR
	R227	NRSA63J-102N	RESISTOR
	R228	NRSA63J-123N	RESISTOR
	R229	NVP1301-683N	V RESISTOR, CHROMA OFF SET
	R230	NRSA63J-223N	RESISTOR
	R232	QRD161J-102	RESISTOR
	R241	NRSA63J-152N	RESISTOR
	R242	NRSA63J-102N	RESISTOR
	R243	NRSA63J-102N	RESISTOR
	R244	NVP1301-222N	V RESISTOR, COLOR DIFF BAL
	R245	NRSA63J-152N	RESISTOR
	R246	NRSA63J-102N	RESISTOR
	R247	NRSA63J-102N	RESISTOR
	R248	NVP1301-222N	V RESISTOR, NOISE SUP
	C201	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C202	NCB31EK-103A	CAPACITOR
	C203	NCT07CH-150A	CAPACITOR
	C204	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C205	NCB31EK-103A	CAPACITOR
	C206	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C207	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C208	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C209	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C210	NCR21CM-437A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C211	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C212	NCB31EK-103A	CAPACITOR
	C213	ECEV0JV220R	E CAPACITOR
	C214	NCR21CM-473A	CAPACITOR
		OR PU59913-473	CAPACITOR
	C215	QEE80JM-226	TANTAL CAPACITOR
	C221	NCB31EK-103A	CAPACITOR
	C222	NCB31EK-103A	CAPACITOR
	C223	QEF81AM-475	TANTAL CAPACITOR
	C224	QCFA1EZ-104	CAPACITOR
	C225	NCB31EK-103A	CAPACITOR
	C226	NCB31EK-103A	CAPACITOR
	C227	NCB31EK-103A	CAPACITOR
	C228	NCB31EK-103A	CAPACITOR
	C229	QEF81AM-475	TANTAL CAPACITOR
	C230	NCB31EK-103A	CAPACITOR
	C231	QCFA1EZ-104	CAPACITOR
	C232	NCB31EK-103A	CAPACITOR
	C233	ECEV0JV220R	E CAPACITOR
	C234	ECEV1CV100R	E CAPACITOR
	L201	PU58201-120K	COIL
	L203	PU58201-120K	COIL
	L204	PU58201-120K	COIL
	EQ201	YU40127-2	EQUALIZER
	EQ202	YU40082-3	EQUALIZER
	LPF201	YU40254	LOW PASS FILTER
	LPF202	YU40254	LOW PASS FILTER
	DL201	YU40128-3	DELAY LINE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	TP201	PU59111-2	TEST PIN
	TP202	PU59111-2	TEST PIN
	CN205	YU40252-9	CAP HOUSING,(BOARD TO BOARD)
	CN206	YU40252-13	CAP HOUSING,(BOARD TO BOARD)

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17. ENCODER BOARD ASSEMBLY <23>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YB20018C-01-C	ENCODER BOARD ASSEMBLY
	IC301	AN2275S	IC
	IC302	TC4S69F	IC
	IC303	MC8180B	IC
	IC304	TC4S71F	IC
	Q301	2SC3936(BC)	TRANSISTOR
		OR 2SC4098(PQ)	TRANSISTOR
		OR 2SC4177(56)	TRANSISTOR
	Q302	2SC3936(BC)	TRANSISTOR
		OR 2SC4177(56)	TRANSISTOR
		OR 2SC4098(PQ)	TRANSISTOR
	Q303	2SC3936(BC)	TRANSISTOR
		OR 2SC4177(56)	TRANSISTOR
		OR 2SC4098(PQ)	TRANSISTOR
	Q304	2SC3931(BC)	TRANSISTOR
		OR 2SC4099(NP)	TRANSISTOR
		OR 2SC4178(34)	TRANSISTOR
	Q305	2SA1532(BC)	TRANSISTOR
		OR 2SA1576(QR)	TRANSISTOR
		OR 2SA1611(56)	TRANSISTOR
	Q306	2SK620	TRANSISTOR
	Q307	2SK620	TRANSISTOR
	Q308	2SK620	FE TRANSISTOR
	D301	RD7.5M-T1B2	ZENER DIODE
	D302	1SS133	DIODE
	R301	NRSA63J-272N	RESISTOR
	R302	NRSA63J-682N	RESISTOR
	R303	NRSA63J-682N	RESISTOR
	R304	NRSA63J-222N	RESISTOR
	R305	NRSA63J-681N	RESISTOR
	R306	NRSA63J-681N	RESISTOR
	R307	NVP1301-222N	V RESISTOR,BURST PHASE
	R308	NRSA63J-102N	RESISTOR
	R309	NVP1301-103N	V RESISTOR,WHITE CLIP
	R310	NRSA63J-102N	RESISTOR
	R311	NRSA63J-391N	RESISTOR
	R312	NRSA63J-681N	RESISTOR
	R313	NRSA63J-332N	RESISTOR
	R314	NRSA63J-122N	RESISTOR
	R315	QRD161J-271	RESISTOR
	R316	NRSA63J-561N	RESISTOR
	R317	NRSA63J-100N	RESISTOR
	R318	NRSA63J-561N	RESISTOR
	R319	NRSA63J-561N	RESISTOR
	R320	QVZ3606-222	RESISTOR,SYNC LEVEL
	R323	NRSA63J-102N	RESISTOR
	R324	NRSA63J-103N	RESISTOR
	R325	NRSA63J-103N	RESISTOR
	R326	NVP1301-103N	V RESISTOR,R CARRIER BAL
	R327	NVP1301-103N	V RESISTOR,B CARRIER BAL
	R328	NRSA63J-103N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R329	NRSA63J-102N	RESISTOR
	R330	NRSA63J-272N	RESISTOR
	R332	NRSA63J-102N	RESISTOR
	R333	NVP1301-103N	V RESISTOR,CHROMA GAIN
	R334	NRSA63J-102N	RESISTOR
	R335	NRSA63J-223N	RESISTOR
	R336	NVP1301-103N	V RESISTOR,BURST LEVEL
	R337	NRSA63J-223N	RESISTOR
	R338	NRSA63J-102N	RESISTOR
	R339	NRSA63J-102N	RESISTOR
	R340	NRSA63J-222N	RESISTOR
	R341	NRSA63J-100N	RESISTOR
	R342	NRSA63J-561N	RESISTOR
	R343	NRSA63J-222N	RESISTOR
	R345	NRSA63J-103N	RESISTOR
	R346	NRSA63J-822N	RESISTOR
	R347	NRSA63J-222N	RESISTOR
	B301	NRSA63J-0R0A	RESISTOR
	B302	NRSA63J-0R0A	RESISTOR
	B303	NRSA63J-0R0A	RESISTOR
	C301	NCT07CH-101A	CAPACITOR
	C302	NCT07CH-101A	CAPACITOR
	C303	NCT07CH-220A	CAPACITOR
	C305	NCB31EK-103A	CAPACITOR
	C306	NCB31EK-103A	CAPACITOR
	C307	QED40JM-127	E CAPACITOR
	C308	NCB31EK-103A	CAPACITOR
	C309	NCR21CM-473A	CAPACITOR
	OR	NCR21CK-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C310	NCB31EK-103A	CAPACITOR
	C311	NCB31EK-103A	CAPACITOR
	C312	NCR21CM-473A	CAPACITOR
	OR	NCR21CK-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C313	PU59758-105	CAPACITOR
	OR	QCF81CZ-105	CAPACITOR
	C314	QEE80JM-476	E CAPACITOR
	OR	QEJ40JM-476	E CAPACITOR
	C315	QEJ41CM-476	E CAPACITOR
	OR	QEJ41CM-336	E CAPACITOR
	C316	NCB31EK-103A	CAPACITOR
	C317	NCB31EK-103A	CAPACITOR
	C320	NCR21CM-473A	CAPACITOR
	OR	NCR21CK-473A	CAPACITOR
	C321	QED41AM-107R	E CAPACITOR
	OR	PU59913-473	CAPACITOR
	C322	QED41CM-107R	E CAPACITOR
	C324	QEE81DM-155	T.CAP
	C325	QEE81DM-226	TANTAL CAPACITOR
	L301	YU40248-101KY	COIL
	L302	YU40248-220KY	COIL
	BPF301	YU40079-3	BAND PASS FILTER
	TRAP301	PU46042-4	CERAMIC TRAP
	SLD1	YU40341	INSULATER
	TP301	PU59111-2	TEST PIN
	TP302	PU59111-2	TEST PIN
	TP303	PU59111-2	TEST PIN
	TP304	PU59111-2	TEST PIN
	TP305	PU59111-2	TEST PIN
	TP306	PU59111-2	TEST PIN

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	CN301	YU40105-12	CAP HOUSING,(BOARD TO BOARD)
	CN302	YU40105-10	CAP HOUSING,(BOARD TO BOARD)
	CN303	PU58655-10	CAP HOUSING
	CN304	YU40096-2Y	CAP HOUSING
	CN305	YU40096-4Y	CAP HOUSING
	CN306	PU58655-3	CAP HOUSING
	CN307	YU40096-2	CAP HOUSING
⚠	CP301	ICP-F20	CIRCUIT PROTECTOR
⚠	CP302	ICP-F10	CIRCUIT PROTECTOR

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18. INDICATOR BOARD ASSEMBLY <24>

	PWBA	YB20019H-03-C	INDICATOR BOARD ASSEMBLY
	IC401	VC2039	IC
	IC402	VC2041	IC
	IC403	M54641FP	IC
	IC404	UPC324G2	IC
	IC405	6VT07	IC
	Q401	2SA1532(BC)	TRANSISTOR
	Q403	2SC3936(BC)	TRANSISTOR
	Q404	2SC3936(BC)	TRANSISTOR
	Q405	2SC3936(BC)	TRANSISTOR
	Q406	2SC3936(BC)	TRANSISTOR
	Q407	2SA1532(BC)	TRANSISTOR
	Q408	2SA1532(BC)	TRANSISTOR
	Q409	2SK198P,Q	TRANSISTOR
	Q410	2SC3936(BC)	TRANSISTOR
	Q411	2SA1532(BC)	TRANSISTOR
	Q412	2SA1532(BC)	TRANSISTOR
	Q413	2SA1532(BC)	TRANSISTOR
	D401	RD8.2MB2	ZENER DIODE
	D402	MA704	DIODE
	D403	MA141WK	DIODE
	D404	MA704	DIODE
	D405	MA184	DIODE
	OR	MA185	DIODE
	R401	NRSA63J-122N	RESISTOR
	R402	NRSA63J-222N	RESISTOR
	R403	NRSA63J-0R0A	RESISTOR
	R404	NRSA63J-104N	RESISTOR
	R405	NRSA63J-0R0A	RESISTOR
	R406	NRSA63J-104N	RESISTOR
	R408	NRSA63J-104N	RESISTOR
	R409	NRSA63J-223N	RESISTOR
	R410	NRSA63J-101N	RESISTOR
	R411	NRSA63J-101N	RESISTOR
	R413	QRD161J-222	RESISTOR
	R415	NRSA63J-472N	RESISTOR
	R416	NRSA63J-472N	RESISTOR
	R417	NRSA63J-153N	RESISTOR
	R418	QRD161J-103	RESISTOR
	R420	NRSA63J-222N	RESISTOR
	R421	NRSA63J-222N	RESISTOR
	R422	NRSA63J-104N	RESISTOR
	R423	NRSA63J-682N	RESISTOR
	R424	NRSA63J-333N	RESISTOR
	R425	NRSA63J-103N	RESISTOR
	R426	NRSA63J-152N	RESISTOR
	R427	NRSA63J-222N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R428	NRSA63J-152N	RESISTOR
	R429	NRSA63J-472N	RESISTOR
	R430	NRSA63J-101N	RESISTOR
	R431	NRSA63J-472N	RESISTOR
	R432	NRSA63J-333N	RESISTOR
	R433	NRSA63J-223N	RESISTOR
	R434	NRSA63J-101N	RESISTOR
	R435	NRSA63J-333N	RESISTOR
	R436	NRSA63J-223N	RESISTOR
	R437	NRSA63J-473N	RESISTOR
	R438	NRSA63J-473N	RESISTOR
	R439	NRSA63J-122N	RESISTOR
	R440	NRSA63J-683N	RESISTOR
	R441	NRSA63J-682N	RESISTOR
	R442	NRSA63J-153N	RESISTOR
	R443	NRSA63J-222N	RESISTOR
	R445	NRSA63J-272N	RESISTOR
	R446	NVP1301-102N	V RESISTOR,IRIS ADJ
	R447	NRSA63J-222N	RESISTOR
	R448	NRSA63J-560N	RESISTOR
	R449	NRSA63J-273N	RESISTOR
	R450	NRSA63J-223N	RESISTOR
	R451	NRSA63J-473N	RESISTOR
	R452	NRSA63J-123N	RESISTOR
	R453	NRSA63J-123N	RESISTOR
	R454	NRSA63J-103N	RESISTOR
	R455	NRSA63J-103N	RESISTOR
	R457	NRSA63J-0R0A	RESISTOR
	R458	NRSA63J-102N	RESISTOR
	R459	NRSA63J-103N	RESISTOR
	R460	NRSA63J-103N	RESISTOR
	R461	NRSA63J-0R0A	RESISTOR
	R463	NRSA63J-333N	RESISTOR
	R464	NRSA63J-682N	RESISTOR
	R465	NRSA63J-104N	RESISTOR
	R466	NRSA63J-104N	RESISTOR
	R467	NRSA63J-104N	RESISTOR
	R468	NRSA63J-104N	RESISTOR
	R469	NRSA63J-104N	RESISTOR
	R470	NRSA63J-102N	RESISTOR
	R471	NRSA63J-104N	RESISTOR
	R472	NRSA63J-0R0A	RESISTOR
	R474	NRSA63J-222N	RESISTOR
	R475	NRSA63J-222N	RESISTOR
	R476	NRSA63J-0R0A	RESISTOR
	R477	NRSA63J-0R0A	RESISTOR
	R478	NRSA63J-0R0A	RESISTOR
	R479	ERT-D2FGL601S	THERMISTOR
	OR	NTH5D471LA	THERMISTOR
	OR	NTH5D471KA	THERMISTOR
	B401	NRSA63J-0R0A	RESISTOR
	B402	NRSA63J-0R0A	RESISTOR
	B403	NRSA63J-0R0A	RESISTOR
	B404	NRSA63J-0R0A	RESISTOR
	B405	NRSA63J-0R0A	RESISTOR
	B406	NRSA63J-0R0A	RESISTOR
	C402	NCF31CZ-104A	CAPACITOR
	C403	QEE81AM-226	E CAPACITOR
	C404	QCFA1EZ-104	CAPACITOR
	C405	NCT07CH-180A	CAPACITOR
	C406	NCT07CH-220A	CAPACITOR
	C407	NCT07CH-220A	CAPACITOR
	C408	QEF80JM-106	TANTAL CAPACITOR
	C408-2	QEE81AM-476	E CAPACITOR
	C409	ECEV0JV220R	E CAPACITOR
	C410	QCFA1EZ-104	CAPACITOR
	C411	ECEV1CV100R	E CAPACITOR
	C412	ECEV0JV220R	E CAPACITOR
	C413	PU59758-105	CAPACITOR
	OR	QCF81CZ-105	CAPACITOR
	C414	ECEV1CV100R	E CAPACITOR
	C415	ECEV0JV220R	E CAPACITOR
	C416	NCT07CH-101A	CAPACITOR
	C417	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C418	QEF80GM-226	TANTAL CAPACITOR
	C419	QEF80JM-106	TANTAL CAPACITOR
	C420	QEF80JM-475	TANTAL CAPACITOR
	C421	QEF81EM-474	TANTAL CAPACITOR
	C422	ECEV1CV100R	E CAPACITOR
	C423	NCB31EK-103A	CAPACITOR
	C424	NCR21CM-473A	CAPACITOR
	OR	PU59913-473	CAPACITOR
	C425	NCS31HK-221A	CAPACITOR
	C426	NCF31CZ-104A	CAPACITOR
	C427	NCF31CZ-104A	CAPACITOR
	C428	NCF31CZ-104A	CAPACITOR
	C429	NCF31CZ-104A	CAPACITOR
	C430	NCF31CZ-104A	CAPACITOR
	C431	NCF31CZ-104A	CAPACITOR
	C432	NCF31CZ-104A	CAPACITOR
	C433	NCF31CZ-104A	CAPACITOR
	C434	PU58948-104	CAPACITOR
	L401	PU58201-120K	COIL
	L402	PU58201-120K	COIL
	L403	PU58201-120K	COIL
	L404	PU58201-120K	COIL
	L405	PU58201-120K	COIL
	L406	PU58201-120K	COIL
⚠	X401	YU40141	CRYSTAL RESONATOR
	SLD401	YU40341	INSULATOR
	CN401	YU40179-110	CAP HOUSING
	CN402	YU40108-10	FPC CONNECTOR
	CN403	YU40105-20	CAP HOUSING,(BOARD TO BOARD)
	CN404	YU40105-10	CAP HOUSING,(BOARD TO BOARD)
	CN405	YU40096-7	CAP HOUSING
	CN406	YU40096-4	CAP HOUSING
	CN407	YU40096-2	CAP HOUSING
	CN408	YU40096-10	CAP HOUSING
	CN409	YU40096-2R	CAP HOUSING
	CN410	YU40096-2B	CAP HOUSING

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19. FULL AUTO BOARD ASSEMBLY <25>

	PWBA	YB20020B-C	FAW BOARD ASSY
	IC501	VC2038	IC
	IC502	BA10324F	IC
	OR	IR3702N1	IC
	OR	UPC324G2	IC
	IC503	BA10324F	IC
	OR	UPC324G2	IC
	Q503	2SC2412K(S)	TRANSISTOR
	Q504	2SC2412K(S)	TRANSISTOR
	D501	MA716	DIODE
	D502	MA716	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PD501	PD170V1	PHOTO DIODE
	R501	NRSA63J-154N	RESISTOR
	R502	NRSA63J-123N	RESISTOR
	R503	NVP1301-223N	V RESISTOR,AW INDOOR B
	R504	NRSA63J-563N	RESISTOR
	R505	NRSA63J-183N	RESISTOR
	R506	NVP1301-223N	V RESISTOR,AW INDOOR R
	R507	NRSA63J-563N	RESISTOR
	R508	NRSA63J-223N	RESISTOR
	R509	NRSA63J-683N	RESISTOR
	R511	NRSA63J-473N	RESISTOR
	R512	NRSA63J-473N	RESISTOR
	R513	NRSA63J-823N	RESISTOR
	R514	NRSA63J-0R0A	RESISTOR
	R515	NVP1301-473N	V RESISTOR,AW R INDOOR LIM
	R516	NRSA63J-273N	RESISTOR
	R517	NRSA63J-123N	RESISTOR
	R518	NVP1301-473N	V RESISTOR,AW R OUTDOOR LIM
	R519	NRSA63J-333N	RESISTOR
	R520	NRSA63J-0R0A	RESISTOR
	R521	NVP1301-473N	V RESISTOR,PRE B INDOOR
	R522	NRSA63J-473N	RESISTOR
	R523	NRSA63J-0R0A	RESISTOR
	R524	NVP1301-473N	V RESISTOR,PRE B FL
	R525	NRSA63J-473N	RESISTOR
	R526	NRSA63J-0R0A	RESISTOR
	R527	NVP1301-473N	V RESISTOR,PRE B OUTDOOR
	R528	NRSA63J-473N	RESISTOR
	R529	NRSA63J-103N	RESISTOR
	R530	NVP1301-473N	V RESISTOR,AW B OUTDOOR LIM
	R531	NRSA63J-473N	RESISTOR
	R533	QRD161J-153	RESISTOR
	R534	NVP1301-473N	V RESISTOR,AW B INDOOR LIM
	R535	NRSA63J-473N	RESISTOR
	R536	NRSA63J-123N	RESISTOR
	R537	NVP1301-473N	V RESISTOR,PRE R INDOOR
	R538	NRSA63J-273N	RESISTOR
	R539	NRSA63J-103N	RESISTOR
	R540	NVP1301-473N	V RESISTOR,PRE R FL
	R541	NRSA63J-333N	RESISTOR
	R542	NRSA63J-103N	RESISTOR
	R543	NVP1301-473N	V RESISTOR,PRE R OUTDOOR
	R544	NRSA63J-393N	RESISTOR
	R548	NRSA63J-104N	RESISTOR
	R549	NVP1301-224N	V RESISTOR,AW B GAIN
	R550	NRSA63J-103N	RESISTOR
	R551	NRSA63J-153N	RESISTOR
	R552	QRD161J-153	RESISTOR
	R553	NVP1301-224N	V RESISTOR,AW R GAIN
	R554	NRSA63J-103N	RESISTOR
	R555	NRSA63J-104N	RESISTOR
	R557	NRSA63J-152N	RESISTOR
	R558	NRSA63J-102N	RESISTOR
	R559	NRSA63J-102N	RESISTOR
	R560	NRSA63J-122N	RESISTOR
	R561	NRSA63J-103N	RESISTOR
	R562	NRSA63J-103N	RESISTOR
	R563	QRD161J-222	RESISTOR
	R567	NRSA63J-102N	RESISTOR
	R568	NRSA63J-273N	RESISTOR
	R569	NRSA63J-0R0A	RESISTOR
	R571	NRSA63J-822N	RESISTOR
	R572	NRSA63J-223N	RESISTOR
	R579	NRSA63J-472N	RESISTOR
	R580	NRSA63J-0R0A	RESISTOR
	R583	NRSA63J-103N	RESISTOR
	R584	NRSA63J-332N	RESISTOR
	R585	NRSA63J-103N	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R586	NRSA63J-222N	RESISTOR
	R587	NRSA63J-0R0A	RESISTOR
	R588	NRSA63J-0R0A	RESISTOR
	R589	NRSA63J-472N	RESISTOR
	R590	NRSA63J-472N	RESISTOR
	B601	NRSA63J-0R0A	RESISTOR
	B602	NRSA63J-0R0A	RESISTOR
	B603	NRSA63J-0R0A	RESISTOR
	B604	NRSA63J-0R0A	RESISTOR
	B605	NRSA63J-0R0A	RESISTOR
	B606	NRSA63J-0R0A	RESISTOR
	B607	NRSA63J-0R0A	RESISTOR
	B608	NRSA63J-0R0A	RESISTOR
	B609	NRSA63J-0R0A	RESISTOR
	C501	NEH11CM-106NZ	E CAPACITOR
	C502	PU59758-105	CAPACITOR
	C503	NCB31EK-103A	CAPACITOR
	C504	NEH10GM-476NZ	E CAPACITOR
	C505	NCB31HK-152A	CAPACITOR
	C506	NCB31HK-152A	CAPACITOR
	C507	NCB31HK-152A	CAPACITOR
	C508	NEH10GM-476NZ	E CAPACITOR
	C509	NEH10JM-226NZ	E CAPACITOR
	C510	NCB31EK-103A	CAPACITOR
	C511	NCB31EK-103A	CAPACITOR
	C513	NEH10GM-476NZ	E CAPACITOR
	C514	NEH10GM-476NZ	E CAPACITOR
	C515	NEH11EM-475NZ	E CAPACITOR
	C516	NEH11EM-475NZ	E CAPACITOR
	L501	PU58201-220K	COIL
	SW501	PU57008	SWITCH(TACT),BLC
	SW502	PU57008	SWITCH(TACT),FADER
	FIL1	YQ40394	WHITE FILTER
	SLD1	YQ40395	SHIELD CASE
	SLD2	YQ40396	SHIELD PLAT
	TP501	PU59111-2	TEST PIN
	TP502	PU59111-2	TEST PIN
	TP503	PU59111-2	TEST PIN
	TP504	PU59111-2	TEST PIN
	TP507	PU59111-2	TEST PIN
	CN501	YU40101-10	CAP HOUSING,(BOARD TO BOARD)

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20. MIC AMP BOARD ASSEMBLY <26>

	PWBA	YB30009A-01-C	MIC AMP BOARD ASSY
	IC701	M5282FP	IC
	R701	NRSA63J-102N	RESISTOR
	R702	NRSA63J-562N	RESISTOR
	R703	NRSA63J-102N	RESISTOR
	R704	NRSA63J-473N	RESISTOR
	R705	NRSA63J-221N	RESISTOR
	R706	NRSA63J-223N	RESISTOR
	R708	NRSA63J-682N	RESISTOR
	R709	NRSA63J-103N	RESISTOR
	R710	NRSA63J-0R0A	RESISTOR
	R711	QRD161J-222	RESISTOR
	C701	ECEV1EV4R7R	E CAPACITOR
	C702	ECEV1CV470P	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C703	ECEV1CV470P	E CAPACITOR
	C704	NCT07CH-101A	CAPACITOR
	C705	ECEV1EV4R7R	E CAPACITOR
	C706	NCB31HK-152A	CAPACITOR
	C707	ECEV1EV4R7R	E CAPACITOR
	C708	ECEV1CV470P	E CAPACITOR

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UPPER DRUM BOARD < 30 >

	PWB	YDM3001-2	UPPER DRUM BOARD

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LED BOARD < 33 >

	PWB	YB40001	LED BOARD
	D1	SIM-20ST	LE DIODE

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21. HIGHT DRIVER BOARD ASSEMBLY <43>

	PWBA	YB20024A-C	H.DRIVER BOARD ASSY
	Q1	2SA1610	TRANSISTOR
	Q2	2SC4176	TRANSISTOR
	Q3	2SA1610	TRANSISTOR
	Q4	2SC4176	TRANSISTOR
	D1	MA141WK	DIODE
	D2	MA141WA	DIODE
	R1	NRSA63J-220N	RESISTOR
	R2	NRSA63J-220N	RESISTOR
	R3	NRSA63J-220N	RESISTOR
	R4	NRSA63J-220N	RESISTOR
	R5	NRSA63J-0R0A	RESISTOR
	C1	NCT07CH-470A	CAPACITOR
	C2	NCT07CH-470A	CAPACITOR
	C3	NCT07CH-470A	CAPACITOR
	C4	NCT07CH-470A	CAPACITOR
	C5	NCB31EK-103A	CAPACITOR
	C6	QEE81CM-226	E CAPACITOR
	C7	QCTA1CH-680	CAPACITOR
	C8	QCTA1CH-220	CAPACITOR
	L1	YU40248-101KY	COIL

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20. E. VIEWFINDER BOARD ASSEMBLY <50>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	YU40355A-C	EVF PWB ASSY
⚠	IC1	BA7125L	IC
	D21	DAN202K	DIODE
	D31	1SS133	DIODE
	D32	1SS136	DIODE
	D33	ERA15-06TU20	DIODE
	D34	ERA15-06TU20	DIODE
	RX1	QRD163J-0R0	RESISTOR
	RX2	QRD163J-0R0	RESISTOR
	VR1	QVZ3521-103	V RESISTOR, H. HOLD
	VR2	QVZ3521-102	V RESISTOR, V. HEIGHT
	VR3	QVZ3521-222	V RESISTOR, CONT
	VR4	YU40382	V RESISTOR, BRIGHT
	R01	QRSA08J-821YN	RESISTOR
	R02	QRSA08J-684YN	RESISTOR
	R03	QRSA08J-120YN	RESISTOR
	R04	QRSA08J-104YN	RESISTOR
	R05	QRSA08J-103YN	RESISTOR
	R06	QRSA08J-823YN	RESISTOR
	R07	QRSA08J-682YN	RESISTOR
	R08	QRSA08J-102YN	RESISTOR
	R09	QRSA08J-471YN	RESISTOR
	R10	QRSA08J-471YN	RESISTOR
	R21	QRSA08J-472YN	RESISTOR
	R22	QRSA08J-561YN	RESISTOR
	R23	QRSA08J-203YN	RESISTOR
	R24	QRSA08J-103YN	RESISTOR
	R25	QRSA08J-103YN	RESISTOR
	R26	QRSA08J-102YN	RESISTOR
	R27	QRSA08J-334YN	RESISTOR
	R31	QRSA08J-332YN	RESISTOR
	R32	QRD183J-625	RESISTOR
	C01	QFN41HJ-222	M CAPACITOR
	C02	QER41CM-106	E CAPACITOR
	C03	QCYA1HK-103	CAPACITOR
	C04	QEK40JM-227	E CAPACITOR
	C05	QER41AM-226	E CAPACITOR
	C06	QCYA1HK-102	CAPACITOR
	C07	QEK41AM-107	E CAPACITOR
	C08	QER41HM-105	E CAPACITOR
	C09	QCYA1HK-223	CAPACITOR
	C10	QEK41AM-107	E CAPACITOR
	C11	QER41HM-104	E CAPACITOR
	C12	QER41HM-104	E CAPACITOR
	C13	QCTA1CH-161	CAPACITOR
	C14	QCYA1HK-822	CAPACITOR
	C15	QFN41HJ-473	M CAPACITOR
	C21	QER41CM-106	E CAPACITOR
	C22	QER41CM-106	E CAPACITOR
	C23	QCTA1CH-161	CAPACITOR
	C24	QER41HM-225	E CAPACITOR
	C31	QER41VM-106	E CAPACITOR
	C32	QER41HM-105	E CAPACITOR
	C33	QEK41AM-107	E CAPACITOR
	C34	QFG42AJ-392	PP CAPACITOR
		QFG42AJ-332	PP CAPACITOR
		QFG42AJ-272	PP CAPACITOR
		QFG42AJ-222	PP CAPACITOR
		QFG42AJ-182	PP CAPACITOR
		QFG42AJ-152	PP CAPACITOR
		QFG42AJ-122	PP CAPACITOR
		QFG42AJ-102	PP CAPACITOR
		QFG42AJ-821	PP CAPACITOR
		QFG42AJ-472	PP CAPACITOR
	C35	PU59343	FM CAPACITOR
	C36	QCFA1HZ-333	CAPACITOR
	L1	PU53223-101H	PEAKING COIL
	L2	PU49995-101	PEAKING COIL
	L3	YU40353	H.L.COIL
⚠	TR1	2SC3665	TRANSISTOR
	TR2	2SC2812L6,L7	TRANSISTOR
⚠	T1	YU40352	F.B.T
⚠	CP	ICP-N10	CIRCUIT PROTECTOR
⚠	TF	PU48295	TH FUSE
	CN1	YU40354	VF CABLE